



UC DAVIS  
CENTER for  
NUTRITION in SCHOOLS  
  
CONNECTING  
*Food, Health, and Learning*



# Food Safety for Child Nutrition Programs

## Participant Manual

Produced 2015 by Cal-Pro-NET Center  
University of California, Davis in Association with the  
California Department of Education  
Nutrition Services Division

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# Food Safety for Child Nutrition Programs

## Participant Manual

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Debra Amos, SNS  
School Nutrition Program Consultant

Marilyn Briggs, PhD, RD, SNS  
Co-Director, Center for Nutrition in Schools  
Department of Nutrition  
University of California, Davis

Julie BoarerPitchford, PhD  
Nutrition Education Consultant  
Nutrition Services Division  
California Department of Education

Christine Bruhn, PhD  
Specialist in Cooperative Extension  
Department of Food Science and Technology  
University of California, Davis

Louise Casias, RD  
Nutrition Education Consultant  
Nutrition Services Division  
California Department of Education

Carol Chase Huegli, MS, RD  
Nutrition Education Administrator  
Nutrition Services Division  
California Department of Education

Deborah Fetter  
Center for Nutrition in Schools  
Department of Nutrition  
University of California, Davis

Kim Frinzell, RD  
Nutrition Education Administrator  
Nutrition Services Division  
California Department of Education

Maria Giovanni, PhD  
Assistant Professor  
Department of Nutrition and Food Sciences  
California State University, Chico

Wanda Grant, RD  
Director of Nutrition Services (Retired)  
Palm Springs Unified School District

Linda Harris, PhD  
Specialist in Cooperative Extension  
Department of Food Science and Technology  
University of California, Davis

Karrie Heneman, PhD  
Department of Nutrition  
University of California, Davis

Grace Huppert, MS, RD  
Nutrition Education Consultant  
Nutrition Services Division  
California Department of Education

Anna Jones, PhD  
Center for Nutrition in Schools  
Department of Nutrition  
University of California, Davis

Sandip Kaur  
Director, Nutrition Services Division  
California Department of Education

Marion MacArthur, RD, SNS  
Food and Nutrition Supervisor (Retired)  
Mt. Diablo Unified School District

Diane Metz  
Emeritus Yolo County Director  
Nutrition, Family, and Consumer Sciences  
Emeritus Advisor  
University of California Cooperative  
Extension, Yolo and Solano Counties

Krista Neary  
Center for Nutrition in Schools  
Department of Nutrition  
University of California, Davis

Brenda Padilla, MS  
Nutrition Services Director  
Sacramento City Unified School District

Shirley Peterson, MS, RD  
Nutrition, Family, and Consumer Sciences  
Emeritus Advisor  
University of California Cooperative  
Extension, San Luis Obispo County

Violet Roefs, MS, RD  
Nutrition Education Consultant (Retired)  
Nutrition Services Division  
California Department of Education

Asata Ratliff, MFA  
Center for Nutrition in Schools  
Department of Nutrition  
University of California, Davis

Lyndsey Ruiz, BS, DTR  
Center for Nutrition in Schools  
Department of Nutrition  
University of California, Davis

Rachel Scherr, PhD  
Postdoctoral Scholar  
Center for Nutrition in Schools  
Department of Nutrition  
University of California, Davis

Margaret (Peggy) Stevenson, SNS  
Director, Nutrition Services (Retired)  
Antioch Unified School District

Sheri Zidenberg-Cherr, PhD  
Specialist in Cooperative Extension  
Co-Director, Center for Nutrition in Schools  
Department of Nutrition  
University of California, Davis

# Introduction

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## Introduction to Food Safety for Child Nutrition Programs

This purpose of this Participant Manual is to provide school nutrition program personnel with the knowledge needed for serving safe meals. This manual is to be used in conjunction with the “Food Safety for Child Nutrition Programs” online course, which can be accessed at <http://cns.ucdavis.edu/content/safety/default.htm>. This site contains a video, transcript, and outline for each of the five lessons.

In addition to the online course, a supplemental lesson about food allergies and food intolerances is available. The lesson PowerPoint can be downloaded from the UC Davis Center for Nutrition in Schools website at <http://cns.ucdavis.edu/training/fs.html>. It is also included as a chapter in this manual.

## Description of Each Lesson Section in this Manual

### Lesson Overview

The lesson overview contains lesson competencies, performance standards, and a brief list of topics included in the lesson.

### Vocabulary

A list of important vocabulary terms is included in each lesson.

### Worksheet

Complete these worksheets while watching the video to help identify key concepts and terms. Answer keys for each worksheet can be found in the appendix.

### Course Slides

These slides include the text you will see in the online course. Some lessons contain additional information not found in the online course that may appear in the exam. These are highlighted in boxes.

**Be sure to review the information referred to in these boxes in order to be well prepared for a food safety manager exam.**

## Appendix Materials

The appendix includes useful resources about food safety as well as further information on topics such as biological contaminants, proper cooking temperatures, lighting requirements, produce safety, and food allergy management. In addition, there are answer keys for each lesson worksheet.

## Using the Online Course

To access the online course, visit <http://cns.ucdavis.edu/content/safety/default.htm>.

You will see the following screen. Use the buttons indicated to start the lesson. Each lesson has downloadable PDF files of the slides (labeled “Outline”) and downloadable scripts (labeled “Transcript”) that can be used to follow along with the videos.

The screenshot displays the online course interface for "Food Safety for Child Nutrition Programs". At the top, a blue banner features the text: "Child nutrition professionals in California schools serve over 4 million meals daily, providing a direct impact on children's dietary patterns." Below this, a paragraph states: "This course will provide child nutrition professionals with training that prepares them to ensure the safety of meals provided to students in California's school districts." Another paragraph explains: "The purpose of this project was to create an on-line course regarding food safety which would enable California child nutrition program staff to meet state certification requirements."

Five lesson cards are arranged in a grid:

- START LESSON 1**: Lesson 1: Identifying Child Nutrition Food Safety Issues. Includes "TRANSCRIPT" and "OUTLINE" links.
- START LESSON 2**: Lesson 2: Preventing Food Contamination. Includes "TRANSCRIPT" and "OUTLINE" links.
- START LESSON 3**: Lesson 3: Managing Foodborne Illnesses. Includes "TRANSCRIPT" and "OUTLINE" links.
- START LESSON 4**: Lesson 4: Creating a Safe and Sanitary Workplace. Includes "TRANSCRIPT" and "OUTLINE" links.
- START LESSON 5**: Lesson 5: HACCP: Ensuring Food Safety at Every Step. Includes "TRANSCRIPT" and "OUTLINE" links.

On the right side, the "Center for Nutrition in Schools" logo is displayed above the "UCDAVIS" logo.

Two callout boxes with arrows provide instructions:

- Top box: "Click on 'Start Lesson' to begin the video." (Points to the "START LESSON 1" button.)
- Bottom box: "Use the 'Transcript' and 'Outline' links to download the video script and slides." (Points to the "TRANSCRIPT" and "OUTLINE" links for Lesson 1.)

At the bottom, a small text line reads: "Nutrition Education in Schools at the University of California, Davis (UCD) assisted the Nutrition Services Division (NSD), California Department of Education (CDE) in meeting identified statewide educational and food safety needs."

Once the video has started playing, use the buttons on the screen for navigation. You can pause the lesson at any time, and also skip forward or backward as needed.

The screenshot shows a video player interface. The main video area displays the title 'Food Safety for Child Nutrition Programs' in large, bold, yellow text. Below the title, it says 'Department of Nutrition' and 'University of California, Davis'. A white arrow points from a text box to the video area, and another white arrow points from a text box to the table of contents.

These buttons allow you to pause the lesson or skip forward or backward.

Use these to skip to different parts of the lesson.

**Lesson 1: Identifying Child Nutrition Food Safety Issues**

Outline	Thumb	Notes	Search
Slide Title		Duration	
1. Program Title			00:16
2. Lesson Title			00:08
3. Purpose			00:18
4. Class Strategies			00:06
5. Class Strategies			00:11
6. Importance of Food...			00:17
7. Importance of Food...			00:17
8. Foodborne Illness in...			00:54
9. Brainstorm			00:25
10. Lesson competency			00:19
11. Performance Stan...			00:11
12. Performance Stan...			00:16
13. Vocabulary			00:20
14. Vocabulary			00:18
15. Vocabulary			00:17
16. Vocabulary			00:20
17. Vocabulary			00:15
18. Food Safety Issues			00:32
19. Food Safety Issues			00:34
20. Food Safety Issues			00:11

27 Minutes 32 Seconds Remaining

Slide 1 / 84 | Playing 00:08 / 00:16







## Lesson 1: Identifying Child Nutrition Safety & Sanitation Issues

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## **Lesson Overview**



### **Lesson Competency**

On completion of this lesson, the participant will develop an understanding of common food safety issues in the child nutrition program environment and some basic ways to promote food safety and sanitation.

### **Performance Standards**

- Explain the five main food safety issues facing child nutrition programs
- Recognize the three basic food safety hazards
- Name the three most common factors responsible for causing foodborne illness
- Describe the four essential rules of food safety
- Explain the requirements for food safety certification in California

### **Lesson Content**

#### **Food Safety Issues**

- There are several issues that make high food safety standards necessary.

#### **Food Safety Concepts**

- Why study safety and sanitation?
- Foodborne illness
- How food becomes unsafe
- Basics of food safety
- Food safety hazards
- Other issues

#### **Exam Content Areas**

- Overview of topics covered on food safety manager certification exams

**For more information about food safety manager exam options, see Appendix A.**

## **Vocabulary**

**Food safety**—The safeguarding of food from anything that could harm the health of consumers

**Foodborne illness**—A sickness that is caused by eating a contaminated food or drinking a contaminated drink

**Foodborne outbreak**—An incidence in which two or more people become sick and have the same symptoms after eating a common food: this is confirmed when a laboratory analysis shows the source of sickness to be a specific food

**Pathogen**—A disease-producing microorganism

**Physical contaminant**—An undesirable, non-food item present in food or water; examples include dirt, hair, broken glass, metal fragments, and bits of packaging materials

**Potentially hazardous foods (PHF)**—Foods that support the growth of microorganisms

**Sanitary**—Free of harmful levels of pathogens

**Temperature abuse**—Holding foods in the temperature danger zone (at unsafe temperatures), which allows bacterial growth, or not cooking or reheating foods properly to destroy harmful microorganisms

### **Did you know?**

PHFs are also called *Time-Temperature Control for Safety (TCS) Foods*.

## **Lesson 1 Worksheet**

Matching: *Draw a line from the definition to the correct word.*

<b><u>Definition</u></b>	<b><u>Word</u></b>
1. The safeguarding of food from anything that could harm the health of consumers	A. Potentially hazardous foods (PHF)
2. A sickness that is caused by eating a contaminated food or drinking a contaminated beverage	B. Temperature abuse
3. An incidence in which two or more people become sick and have the same symptoms after eating a common food; this is confirmed when a laboratory analysis shows the source of a sickness to be a specific food	C. Food safety
4. A disease-producing microorganism	D. Sanitary
5. An undesirable, non-food item present in food or water; examples include dirt, hair, broken glass, metal fragments, and bits of packaging materials	E. Foodborne outbreak
6. Foods that support the growth of microorganisms	F. Physical contaminant
7. Free of harmful levels of pathogens	G. Foodborne illness
8. Holding foods in the temperature danger zone (at unsafe temperatures), which allows bacterial growth, or not cooking or reheating foods properly to destroy harmful microorganisms	H. Pathogen

9. Why is foodborne illness a serious issue?

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10. Why is foodborne illness more serious than it was in the past?

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11. Why is there a need to study sanitation and safety?

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12. The temperature danger zone is between \_\_\_\_\_ °F and \_\_\_\_\_ °F. Food becomes unsafe after \_\_\_\_\_ hours in the temperature danger zone.

13. Name the three basics food safety hazards:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_

14. The essential rules of food safety are:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_
- 4) \_\_\_\_\_

15. What is the number one thing a child nutrition employee can do to curb the spread of foodborne illness?

---

---

16. Name the three most common factors responsible for causing foodborne illness:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_





## Lesson 1 Slides

### Food Safety for Child Nutrition Programs

Department of Nutrition  
University of California, Davis

Slide 1

### Food Safety for Child Nutrition Programs

Lesson 1: Identifying Child  
Nutrition Food Safety Issues

Slide 2

### Purpose

- Safeguard health of children
- Prepare child nutrition professionals to meet California food safety certification requirements

Slide 3

### Class Strategies

- Videotapes
- Study Questions

Slide 4

### Class Strategies

- Case Studies
- PowerPoint Presentations

Slide 5

### Importance of Food Safety

- Food safety involves keeping food safe from anything that could harm the health of a person.

Slide 6

### Importance of Food Safety

- High Standards
  - Food enjoyed
  - No illness, injury, or other problems
- Poor Standards
  - Harm Possible
  - Death Possible

Slide 7

### Foodborne Illness in the News

Salmonella outbreak!

Excerpt from: Centers for Disease Control and Prevention. Multidrug-resistant Salmonella serotype Typhimurium—United States, 1996. MMWR Morb Mortal Wkly Rep. 1997 Apr 11;46(14):308-10.

Slide 8

### Foodborne Illness in the News

- Brainstorm
  - Why is foodborne illness a serious issue?
  - Why is foodborne illness more serious than it was in the past?

Slide 9

### Lesson Competency

- Develop an understanding of ...
  - common food safety issues in the child nutrition program environment and
  - basic ways to promote food safety and sanitation.

Slide 10

### Performance Standards

- Explain the five main food safety issues facing child nutrition programs.
- Recognize the three basic food safety hazards.

Slide 11

### Performance Standards

- Name the three most common factors responsible for causing foodborne illness.
- Describe the four essential rules of food safety.
- Explain the requirements of food safety certification in California.

Slide 12

### Vocabulary

**Food Safety:** The safeguarding of food from anything that could harm the health of consumers.

**Foodborne illness:** A sickness that is transferred to people by food or water. It is caused by eating a contaminated food or drinking a contaminated beverage.

Slide 13

### Vocabulary

**Foodborne outbreak:** An incidence in which two or more people become sick and have the same symptoms after eating a common food. A foodborne outbreak is confirmed when a laboratory analysis shows the source of a sickness to be a specific food.

Slide 14

### Vocabulary

**Pathogen:** A disease producing microorganism.

**Physical contaminant:** An undesirable, non-food item present in food or water. Examples include dirt, hair, broken glass, metal fragments, and bits of packaging materials.

Slide 15

### Vocabulary

**Potentially hazardous foods (PHF):** Foods that support the growth of microorganisms.

**Sanitary:** Free of harmful levels of pathogens.

Slide 16

### Vocabulary

**Temperature abuse:** Holding foods in the temperature danger zone (at unsafe temperatures) which allows bacterial growth, or not cooking or reheating foods properly to destroy harmful microorganisms.

Slide 17

### Food Safety Issues

- People eat food prepared out of the home
- More hands are involved in preparing food
- When more people handle the food, the chances of food contamination increase

Slide 18

### Food Safety Issues

- Pathogens are harder to control.

Slide 19

### Food Safety Issues

- More food is being produced in fewer manufacturing plants.

Slide 20

### Food Safety Issues

- Food imports are on the rise.

Slide 21

### Food Safety Issues

- Food establishments serve “at risk” people.

Slide 22

### Why Study Sanitation and Safety?

- Customer protection

Slide 23

### Why Study Sanitation and Safety?

- Employee protection

Slide 24

### Why Study Sanitation and Safety?

- Legal requirement

Slide 25

### Why Study Sanitation and Safety?

- Good business practice

Slide 26

### Why Study Sanitation and Safety?

- Pride in the workplace

Slide 27

### Everyday Habits

#### Do:

- 1.
- 2.
- 3.
- 4.
- 5.

#### Don't:

- 1.
- 2.
- 3.
- 4.
- 5.

Slide 28

### Foodborne Illness

- Sickness transferred to people by food or water
  - By eating contaminated food
  - By drinking contaminated beverages

Slide 29

### How Food Becomes Unsafe

- Time and temperature abuse
  - Temperature danger zone
    - 41 °F to 135 °F
  - Four-hour rule
    - Food becomes unsafe after four hours in the temperature danger zone
- Cross-Contamination
- Poor personal hygiene

Slide 30

### Basics of Food Safety

1. Keep food-contact surfaces clean and sanitized.
2. Practice good personal hygiene.
3. Wash hands thoroughly and regularly.
4. Minimize the time food spends in the temperature danger zone.
5. Prevent cross-contamination.

Slide 31

### Food Safety Hazards

- Biological contaminants
- Chemical contaminants
- Physical contaminants

Slide 32

### Biological Contaminants

- Harmful microorganisms present in food or water
- They consist of bacteria, viruses, fungi, molds, and yeasts, and parasites

Slide 33

### Biological Contaminants

- Potentially Hazardous Foods are foods that support the growth of microorganisms.

Slide 34

### Chemical Contaminants

- Undesirable chemical substances in food or water
- Natural
- Added

Slide 35

### Physical Contaminants

- Non-food items present in food or water

Slide 36

### Other Issues

- Most common pests
  - Roaches
  - Flies
  - Rodents

Slide 37

### Other Issues

- Work flow and floor plan
- Construction materials
- Size and color
- Placement
- Ability to be cleaned and maintained

Slide 38

### Other Issues

- Plumbing Hazards

Slide 39

### Essential Rules of Food Safety

1. Clean
2. Separate

Slide 40

### Essential Rules of Food Safety

3. Cook
4. Chill

Slide 41

### Food Safety Certification

#### Assembly Bill 1978

- On or before January 1, 2000, each food facility shall have an owner or employee who has successfully passed an approved and accredited food safety certification examination.

Slide 42

## Food Safety Certification

### Assembly Bill 1978

- The food safety certificates issued need to be retained on file at the food facility at all times and made available for inspection by the health officer if needed.

Slide 43

## Food Safety Certification

### Assembly Bill 1978

- Certified individuals shall be recertified every five years by passing an approved and accredited food safety examination.

Slide 44

## Food Safety Certification

### Customized Child Nutrition Exam

- Accredited by National Registry of Food Safety Professionals
- 80 questions
- Passing score: 75 or higher
- 2 hours allowed

Slide 45

**Unfortunately, the customized child nutrition exam is no longer available. For more information about other exam options, see Appendix A.**

## Exam Content Areas

- Ensure food protections (12)
- Purchase and receive food (11)
- Store foods and supplies (11)
- Prepare foods (9)
- Serve and display foods (9)

Slide 46

## Exam Content Areas

- Use and maintain tools and equipment (2)
- Clean and sanitize equipment, utensils, and food-contact surfaces (4)
- Select, monitor, and maintain water sources (1)
- Monitor and maintain plumbing fixtures (1)
- Monitor and maintain ventilation systems (1)

Slide 47

## Exam Content Areas

- Select, monitor, and maintain waste disposal facilities and equipment (1)
- Clean and maintain toilet and handwashing equipment and facilities (1)
- Perform general maintenance and housekeeping duties (1)
- Monitor the location of equipment and facilities (2)

Slide 48



### Exam Content Areas

- Assure proper ventilation equipment (1)
- Monitor personal hygiene of personnel (3)
- Assure personnel are properly trained (2)
- Monitor personnel behaviors related to food safety (7)
- Ensure regular compliance and minimize legal violations (1)

Slide 49

### Review Questions

- Q. Name one reason why food safety is an important issue in child nutrition programs?

Slide 50

### Review Questions

- Q. Name one reason why food safety is an important issue in child nutrition programs?
- A. (1) more people eat away from home, (2) pathogens are harder to control, (3) more food is produced in fewer manufacturing plants, (4) food imports are on the rise, (5) food establishments serve “at risk” people

Slide 51

### Review Questions

- Q. What is the number one thing a child nutrition employee can do to curb the spread of foodborne illness?

Slide 52

### Review Questions

- Q. What is the number one thing a child nutrition employee can do to curb the spread of foodborne illness?
- A. Proper personal hygiene including proper hand washing procedures.

Slide 53

### Review Questions

- Q. What is an example of a chemical contaminant?

Slide 54

### Review Questions

- Q. What is an example of a chemical contaminant?
- A. Cleaning agent, pesticide, food allergen, food additive, etc.

Slide 55

### Review Questions

- Q. What do hair, fingernail polish, and staples all have in common?

Slide 56

### Review Questions

- Q. What do hair, fingernail polish, and staples all have in common?
- A. They are all physical contaminants when found in food.

Slide 57

### Review Questions

- Q. What do you call a disease-producing organism?

Slide 58

### Review Questions

- Q. What do you call a disease-producing organism?
- A. A pathogen.

Slide 59

### Review Questions

- Q. What is another name for foodborne illness?

Slide 60

### Review Questions

- Q. What is another name for foodborne illness?
- A. Food poisoning.

Slide 61

### Review Questions

- Q. Name one safety feature to consider in designing equipment?

Slide 62

### Review Questions

- Q. Name one safety feature to consider in designing equipment?
- A. Construction materials, size, color, or placement.

Slide 63

### Review Questions

- Q. Besides bacteria, name three other biological contaminants.

Slide 64

### Review Questions

- Q. Besides bacteria, name three other biological contaminants.
- A. Viruses, parasites, fungi, yeast, or molds.

Slide 65

### Review Questions

- Q. Name the three most common pests in the food service environment.

Slide 66

### Review Questions

- Q. Name the three most common pests in the food service environment.
- A. Roaches, flies, rodents.

Slide 67

### Review Questions

- Q. What are the four essential rules of food safety?

Slide 68

### Review Questions

- Q. What are the four essential rules of food safety?
- A. Clean, separate, cook, and chill.

Slide 69

### Review Questions

- Q. What does it mean to be certified in food safety?

Slide 70

### Review Questions

- Q. What does it mean to be certified in food safety?
- A. Successfully passing an approved certification exam of food safety knowledge.

Slide 71

### Review of Lesson Performance Standards

Slide 72

Explain the five main food safety issues facing child nutrition programs

Slide 73

Explain the five main food safety issues facing child nutrition programs

1. More people eat food prepared out of the home.
2. Pathogens are harder to control.
3. More food is being produced in fewer manufacturing plants.
4. Food imports are on the rise.
5. Food establishments serve “at risk” people.

Slide 74

Recognize the three basic food safety hazards

Slide 75

Recognize the three basic food safety hazards

1. Biological contaminants
2. Chemical contaminants
3. Physical contaminants

Slide 76

Name the three most common factors responsible for causing foodborne illness

Slide 77

Name the three most common factors responsible for causing foodborne illness

1. Time and temperature abuse
2. Cross-contamination
3. Poor personal hygiene

Slide 78

Describe the four essential rules of food safety

Slide 79

Describe the four essential rules of food safety

1. Clean
2. Separate
3. Cook
4. Chill

Slide 80

Explain the requirements of food safety certification in California

Slide 81

Explain the requirements of food safety certification in California

1. As of January 1, 2000, each food facility must have an owner or employee who has successfully passed an approved and accredited food safety certification examination.
2. The food safety certificates issued need to be retained on file at the food facility at all times and made available for inspection by the health enforcement officer if needed.

Slide 82

Explain the requirements of food safety certification in California

3. Certified individuals shall be recertified every five years by passing an approved and accredited food safety certification examination.

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Food Safety for Child Nutrition Programs

Thank You

Department of Nutrition  
University of California, Davis

Slide 84

## Lesson 2: Preventing Food Contamination

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## **Lesson Overview**



### **Lesson Competency**

Develop an understanding of harmful microorganisms that are responsible for most foodborne illness and how these microorganisms grow and spread

### **Performance Standards**

- Contrast the terms food contamination and food spoilage
- Recognize common harmful microorganisms found in the food service environment that may cause foodborne illness
- Identify factors that affect bacterial growth
- Define the temperature danger zone and the length of time a food can be safely held at these temperatures
- Describe the effect of acidity or alkalinity on bacterial growth and how this affects food handling and storage
- Explain three ways cross-contamination may occur
- Describe ways to prevent food contamination

### **Lesson Content**

#### **Food Contamination**

- Exposure of a food to a pathogen, or chemical or physical hazard

#### **Types of Contaminants**

- Biological
- Chemical
- Physical

#### **Foodborne Infection, Intoxication, and Toxin-Mediated Infection**

- Infection: Illness caused by eating a food containing a living, disease-causing microorganism
- Intoxication: Illness caused by eating a food that contains a harmful chemical or toxin produced by a bacteria or other source

- Toxin-mediated infection: Illness caused by eating a food that contains harmful microorganisms that will produce toxins once inside the human body

### Biological contaminants

- Bacteria
- Viruses
- Parasites
- Fungi

### Causes of Foodborne Illness

- *Trichinella spiralis*
- *Clostridium botulinum*
- *Clostridium perfringens*
- *Escherichia coli*
- *Salmonella*
- *Staphylococcus aureus*

Learn more about these pathogens in Appendix B!

### Factors Affecting the Growth of Microorganisms: FATTOM

- Food
- Acidity
- Temperature
- Time
- Oxygen
- Moisture

#### Did you know?

Some strains of pathogenic bacteria can survive below pH 4.6, such as *E. coli* O157:H7

### Cross-Contamination

- Transfer of harmful microorganisms from one item to another

### Preventing Biological Contamination

- Practicing good personal hygiene
- Controlling time and temperature
- Preventing cross-contamination

### Preventing Chemical Contamination

- Proper storage and labeling
- Proper usage

### Food Allergens

- Classified as a chemical contaminant

### Preventing Physical Contamination

- Proper cleaning and storage
- Do not wear false fingernails, jewelry, etc.
- Use a hair restraint

#### Did you know?

The eight most common food allergies are:

- |              |              |
|--------------|--------------|
| 1. Peanuts   | 5. Wheat     |
| 2. Tree nuts | 6. Soy       |
| 3. Milk      | 7. Fish      |
| 4. Egg       | 8. Shellfish |

## Vocabulary

**Acidity**—A measurement on a pH scale ranging from 0 (very acid) to 14.0 (very alkaline or basic), with 7.0 being neutral; a pH level between 4.6 and 7.0 will support bacterial growth

**Aerobic microorganisms**—Microorganisms that must have oxygen in order to grow

**Anaerobic microorganisms**—Microorganisms that cannot survive when oxygen is present, but will grow in oxygen-free environments, such as in vacuum-packaged foods

**Bacteria**—Living, microscopic, single-celled organisms that are involved in fermenting and spoiling foods which often cause disease

### **Did you know?**

Bacteria are not plants or animals.  
Fungi are not plants, animals,  
or bacteria.

**Cross-contamination**—The transfer of harmful microorganisms (pathogens) or other harmful substances from one food, water, or non-food item to another; commonly happens when pathogens from raw food are transferred to a cooked or ready-to-eat food by contaminated hands, equipment, or utensils

**Facultative anaerobic microorganisms**—Microorganisms that can grow with or without oxygen, but have a preference for without; most pathogens are facultative anaerobic microorganisms

**Food contamination**—Exposure of a food to a pathogen, or chemical or physical hazard; not usually detectable by sight, smell, or taste

**Food infection**—Illness caused by eating a food containing a living, disease-causing microorganism

**Food intoxication**—Illness caused by eating a food that contains a harmful chemical or toxin produced by a bacteria or other source

**Food spoilage**—Damage to the edible quality of food, which may or may not lead to foodborne illness; often easily detectable by sight, smell, or taste

**Fungi**—Organisms that range from single-celled, microscopic organisms, such as yeasts and molds to multicellular organisms, such as mushrooms; fungi are not plants, animals, or bacteria.

**MAP**—MAP stands for Modified Atmosphere Packaging, a sealed package in which the oxygen has been reduced or replaced with other gases, such as nitrogen and carbon dioxide extending the shelf life of a food

**Microorganisms**—Microscopic organisms

**Mold**—A fungus that produces a furry growth on vegetable or animal matter exposed to damp conditions

**Parasite**—An organism that lives on or in, and feeds off of, another living thing

**pH**—A symbol used to designate the acidity or alkalinity of a food

**Potentially hazardous goods (PHF)**—Foods that support the growth of microorganisms

**Sous-vide**—Meaning “without air” in French, a process by which raw ingredients, often entire recipes, are sealed in plastic pouches and then the air is vacuumed out and sometimes replaced with nitrogen or carbon dioxide; the pouch is minimally cooked under precise conditions and immediately refrigerated

**Toxin-medicated infection**—Illness caused by eating a food that contains harmful microorganisms that will produce toxins once inside the human body

## **Lesson 2 Worksheet**

*Match the definition to the correct word.*

<b><u>Definition</u></b>		<b><u>Word</u></b>
1. A measurement on a pH scale ranging from 0 (very acid) to 14.0 (very alkaline or basic), with 7.0 being neutral	_____	A. Cross-contamination
2. Microorganisms that must have oxygen in order to grow	_____	B. Bacteria
3. Microorganisms that cannot survive when oxygen is present	_____	C. Food contamination
4. Living, microscopic, single-celled organisms that are involved in fermenting and spoiling foods which often cause disease	_____	D. Aerobic microorganisms
5. The transfer of harmful microorganisms (pathogens) or other harmful substances from one food, water, or non-food item to another	_____	E. Fungi
6. Microorganisms that can grow with or without oxygen, but have a preference for without; most pathogens are these	_____	F. Food spoilage
7. Exposure of a food to a pathogen, or chemical or physical hazard; not usually detectable by sight, smell, or taste	_____	G. Acidity
8. Damage to the edible quality of food, which may or may not lead to foodborne illness; often easily detectable by sight, smell, or taste	_____	H. Facultative anaerobic microorganisms
9. Organisms that range from single-celled, microscopic organisms, such as yeasts and molds to multicellular organisms, such as mushrooms	_____	I. Anaerobic microorganisms

Match the definition to the correct word.

- |  |       |  |
|--|-------|--|
| 10. A sealed package in which the oxygen has been reduced or replaced with other gases, such as nitrogen and carbon dioxide  | _____ | J. Parasite                            |
| 11. Microscopic organisms  | _____ | K. Microorganisms                      |
| 12. A fungus that produces a furry growth on vegetable or animal matter exposed to damp conditions                           | _____ | L. pH                                  |
| 13. An organism that lives on or in, and feeds off of, another living thing  | _____ | M. Sous-vide                           |
| 14. A symbol used to designate the acidity or alkalinity of a food   | _____ | N. Modified Atmosphere Packaging (MAP) |
| 15. A process by which raw ingredients, often entire recipes, are sealed in plastic pouches and then the air is vacuumed out | _____ | O. Mold                                |
- 16.
- A. \_\_\_\_\_ is exposure of a food to a pathogen, or chemical or physical hazard and is not usually detected by sight, smell, or taste.
  - B. \_\_\_\_\_ is damage to the edible quality of food, which may or may not lead to foodborne illness and is often detected by sight, smell, or taste.
  - C. Foodborne \_\_\_\_\_ is caused by eating food that contains a living, disease-causing microorganism (ex: *Listeria monocytogenes*, Hepatitis A, *Taxoplasma gondii*).
  - D. Foodborne \_\_\_\_\_ is caused by eating food that contains a harmful chemical or toxin produced by bacteria or other source (ex: *Staphylococcus aureus*, *Clostridium botulinum*).
  - E. \_\_\_\_\_-mediated infection is caused by eating food that contains harmful microorganisms that will produce a toxin once inside the human body (ex: *E. coli* 0157:H7, *Clostridium botulinum*).

## 17. Factors Affecting the Growth of Microorganisms:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_
- 4) \_\_\_\_\_
- 5) \_\_\_\_\_
- 6) \_\_\_\_\_

18. \_\_\_\_\_ - \_\_\_\_\_ is when harmful microorganisms can be transferred from one item to another. Typically, microbes from a raw food are transferred to a cooked or ready-to-eat food by contaminated hands, equipment, or utensils.

- Explain the three ways cross-contamination may occur:

- 1) \_\_\_\_\_: Thawing beef is stored above an uncovered salad and drips into it
- 2) \_\_\_\_\_: Food handler scratches body and then handles food with bare hands
- 3) \_\_\_\_\_: Meat slicer is used to slice raw meat and then to slice bologna for cold sandwiches without being washed

- The California Retail Food Code requires that employees wear \_\_\_\_\_ when contacting food or food-contact surfaces if they have cuts, sores, artificial nails, etc.

19. Which of the following does NOT explain why bacteria are the most common cause of foodborne disease in a food establishment?

- a) Under ideal conditions, bacteria can grow very rapidly.
- b) Bacteria are found naturally in many foods.
- c) Bacteria can be easily transferred from one food source to another.
- d) Bacteria need a host to survive.

20. Most bacteria that cause foodborne illness grow:

- a) With or without oxygen between 41°F and 135°F.
- b) Without oxygen between 41°F and 165°F.
- c) With oxygen between 41°F and 135°F.
- d) With or without oxygen between 41°F and 165°F.

21. Which of the following organisms is most likely to cause foodborne illness in a food establishment?

- a) *Salmonella*
- b) *Cryptosporidium parvum*
- c) *Anasakis*
- d) *Trichanella spiralis*

Learn more about these  
pathogens in Appendix B!

22. Bacteria grow best within a narrow temperature range called the temperature danger zone. The temperature danger zone is between:

- a) 0 °F and 220 °F
- b) 32 °F and 135 °F
- c) 41 °F and 135 °F
- d) 41 °F and 165 °F

23. Bacteria that cause foodborne illness will only grow on foods that have a pH range of \_\_\_\_ to \_\_\_\_.

- a) 3.2 to 9.0
- b) 4.6 to 7.0
- c) 5.0 to 7.0
- d) 7.0 to 9.0

24. Bacteria that cause foodborne illness will only grow on foods that have a water activity (Aw) above \_\_\_\_.

- a) 0.85
- b) 0.70
- c) 0.46
- d) 0.10



25. Why do some bacteria form spores?

- a) To reproduce
- b) To move more easily from one location to another
- c) To survive adverse environmental conditions
- d) To survive without oxygen

26. Which of the following is NOT considered a potentially hazardous food?

- a) Red meat
- b) Fish and shellfish
- c) Poultry and eggs
- d) Dried rice

27. The most effective way to control the growth of bacteria in a food establishment is to control:

- a) Time and temperature
- b) Oxygen and pH conditions
- c) Temperature and water activity
- d) Water activity and food availability



## Lesson 2 Slides

### Food Safety for Child Nutrition Programs

Department of Nutrition  
University of California, Davis

Slide 1

### Food Safety for Child Nutrition Programs

#### Lesson 2: Preventing Food Contamination

Slide 2

#### Lesson Competency

- Develop an understanding of the design and maintenance of a safe and sanitary food service facility, including preventing contamination by common pests and taking precautions to prevent accidents and injuries.

Slide 3

#### Performance Standards

- Contrast the terms food contamination and food spoilage.
- Recognize common harmful microorganisms found in the food service environment that may cause foodborne illness.

Slide 4

#### Performance Standards

- Identify factors that affect bacterial growth.
- Define the temperature danger zone and the length of time a food can be safely held at these temperatures.

Slide 5

#### Performance Standards

- Describe the effect of acidity or alkalinity on bacterial growth and how this affects food handling and storage.
- Explain three ways cross-contamination may occur.
- Describe ways to prevent food contamination.

Slide 6

### Vocabulary

- **Acidity:** A measurement on a pH scale ranging from 0 (very acid) to 14.0 (very alkaline or basic), with 7.0 being neutral. A pH level between 4.6 and 7.0 will support bacterial growth.
- **Aerobic microorganisms:** Microorganisms that must have oxygen in order to grow.

Slide 7

### Vocabulary

- **Anaerobic microorganisms:** Microorganisms that cannot survive when oxygen is present. They grow well in oxygen-free environments, such as in vacuum packaged foods.
- **Bacteria:** Living, microscopic organisms made up of single cells, involved in fermenting and spoiling foods, often causing disease.

Slide 8

### Vocabulary

- **Cross-contamination:** The transfer of harmful microorganisms (pathogens) or other harmful substances from one food, water, or non-food item to another. This commonly happens when pathogens from raw food are transferred to a cooked or ready-to-eat food by contaminated hands, equipment, or utensils.

Slide 9

### Vocabulary

- **Facultative anaerobic microorganisms:** Microorganisms that can grow with or without free oxygen but have a preference. Most pathogens are facultative anaerobic microorganisms.
- **Food contamination:** Exposure of a food to pathogen or chemical or physical hazard; not usually detectable by sight, smell, or taste.

Slide 10

### Vocabulary

- **Food Spoilage:** Damage to the edible quality of food which may or may not lead to foodborne illness; often easily detectable by sight, smell, or taste.
- **Fungi:** Organisms that are neither plants, animals, or bacteria. They range from single-celled, microscopic organisms, such as yeasts and molds, to multicellular organisms such as mushrooms.

Slide 11

### Vocabulary

- **MAP:** MAP stands for Modified Atmosphere Packaging, a sealed package in which the oxygen has been reduced or replaced with other gases, such as nitrogen and carbon dioxide. This type of packaging extends the shelf life of a food. (Exp. Pre-washed lettuce)
- **Microorganisms:** Microscopic plants or animals, such as bacteria.

Slide 12

#### Did you know?

Bacteria are actually neither plants, nor animals.

### Vocabulary

- **Mold:** A fungus that produces a furry growth on vegetable or animal matter exposed to damp conditions.
- **Parasite:** An animal or plant that lives on or in and feeds off of another living thing.
- **pH:** A symbol used to designate the acidity or alkalinity of a food.

Slide 13

### Vocabulary

- **Potentially hazardous foods (PHF):** Foods that support the growth of microorganisms.

Slide 14

#### Did you know?

These are also called *Time-Temperature Control for Safety (TCS) Foods*.

### Vocabulary

- **Sous-vide:** A process by which raw ingredients, often entire recipes, are sealed in plastic pouches and then the air is vacuumed out. The pouch is minimally cooked under precise conditions and immediately refrigerated. Sometimes the air in the pouch is replaced with nitrogen or carbon dioxide. (Exp. Fish fillets)

Slide 15

### Have you...

...ever had a foodborne illness?

Slide 16

### Food Contamination

- Exposure of a food to a pathogen or chemical or physical hazard
- Not usually detected by sight, smell, or taste

Slide 17

### Food Spoilage

- Damage to the edible quality of food, which may or may not lead to foodborne illness
- Often detected by sight, smell, or taste

Slide 18

### Three Types of Contaminants

- Biological Contaminants
- Chemical Contaminants
- Physical Contaminants

Slide 19

### How Harmful Organisms Invade the Food Service Environment

- Food
- People
- Unsanitary facilities
- Unsanitary equipment
- Disease spreading pests

Slide 20

### Biological Contaminants

- Pathogens
  - Microorganisms that cause disease
- Four types of Pathogens
  - Bacteria
  - Viruses
  - Parasites
  - Fungi

Slide 21

### Foodborne Infection

- Caused by eating food that contains a living, disease-causing microorganism
- Examples:
  - *Listeria monocytogenes* (a bacterium)
  - Hepatitis A (a virus)
  - *Toxoplasma gondii* (a parasite)

Slide 22

### Foodborne Intoxication

- Caused by eating food that contains a harmful chemical or toxin produced by bacteria or other source
- Examples:
  - *Staphylococcus aureus* (a bacterium)
  - *Clostridium botulinum* (a bacterium)

Slide 23

### Toxin-Mediated Infection

- Caused by eating food that contains harmful microorganisms that will produce a toxin once inside the human body
- Examples:
  - *E. coli* O157:H7
  - *Clostridium botulinum* (a bacterium)

Slide 24

### Onset Time

- Number of hours between the time a person eats the contaminated food and when the person first shows symptoms of the illness

Slide 25

### Bacteria

- Plural for Latin “bacterium”
- Single-celled organisms

Slide 26

### Bacteria

- Vegetative = grow and reproduce

Slide 27

### Bacteria

- Some produce spores
  - To help them survive stressful conditions
- Spores are resistant to
  - Boiling
  - Freezing
  - Some sanitizing solutions

Slide 28

### Bacteria

- Spores can change to vegetative bacteria if:
  - Foods are left in the temperature danger zone (41°F to 135°F) for 4 hours or more or
  - Foods are not cooled properly

Slide 29

### Viruses

- Are microscopic and infectious
- Are able to grow and reproduce inside a host
- Are not able to multiply in foods
- Are transmitted to food by a carrier (food service worker)
- Are able to survive in places other than a potentially hazardous food

Slide 30

## Viruses

- Can be transferred from
  - A food service worker to a food
  - One food to another
  - Contaminated water supply to a food
  - Food-contact surface to a food

Slide 31

## Viruses

- Three viruses most commonly found in a food establishment
  - Hepatitis A
  - Norwalk Virus
  - Rotavirus

Slide 32

## Viruses

- Key to controlling viruses
  - Proper hand washing, especially after using the toilet
- Also Important
  - Good employee health

Slide 33

## Parasites

- Are small or microscopic animals or plants
- Are dependent on a living host
- Are able to contaminate water and ice
- Are the cause of fewer foodborne illnesses than are bacteria and viruses

Slide 34

## Parasites

- Most common parasites
  - Roundworms that live in pigs or fish
  - Protozoa that live mainly in contaminated water
- Source of parasites
  - Raw or undercooked fish
  - Produce watered with contaminated water

Slide 35

## Fungi

- Range from microscopic organisms to mushrooms
- Found in air, soil, and water
- Those that cause food spoilage
  - Molds
  - Yeasts

Slide 36



## Fungi

- Molds can grow
  - On almost any food
  - In a variety of conditions
- To survive, yeasts need
  - Sugar
  - Moisture

Slide 37

## Fungi

- Contamination is visible
- Food should be discarded
- Keys to preventing spoilage from molds and yeasts are
  - Proper inventory control
  - Proper rotation

Slide 38

## Meet the Culprits

Slide 39

**Learn more about these  
pathogens in Appendix B!**

## “Tricky Trichinella”

*Trichinella spiralis* says:

“I’m a parasite which means I need a living host to survive. I can spread to humans if they eat undercooked game or pork...”

Slide 40

## “Tricky Trichinella”

*Trichinella spiralis* says:

“You can prevent me from taking hold by cooking meat thoroughly. Proper curing, pickling, freezing, cooking, and canning also help keep me under control...”

Slide 41

## “Tricky Trichinella”

*Trichinella spiralis* says:

“I’m no fun! I cause trichinosis, which makes people vomit and have stomach pain. In time, they may also have sore muscles, a fever, and even a rash.”

Slide 42

### “Brazen Botchy”

Clostridium botulinum says:

“I’m a bacterium found in soil and water. Bacteria are living organisms made up of single cells. Not all bacteria are harmful, but I sure can be! I produce a toxin that can make you very sick...”

Slide 43

### “Brazen Botchy”

Clostridium botulinum says:

“You may be able to kill me with thorough cooking, but my spores may survive. If you see a bulging can, throw it out! I could be at work inside...”

Slide 44

### “Brazen Botchy”

Clostridium botulinum says:

“I can cause vomiting, double vision, and droopy eyelids, and make it difficult to speak or swallow. I may even KILL you!”

Slide 45

### “Pesky Perfy”

Clostridium perfringens says:

“You may have heard of me. They call me the ‘cafeteria germ’ because I love foods held at room temperature, or in steam tables at temperatures below 135°F...”

Slide 46

### “Pesky Perfy”

Clostridium perfringens says:

“Like my cousin ‘Brazen Botchy,’ I live in the soil and am resistant to cooking. I can also be found in the intestines of humans and animals or in sewage...”

Slide 47

### “Pesky Perfy”

Clostridium perfringens says:

“When eaten, I cause diarrhea and gas pains. You may be able to STOP me by holding and serving foods in small portions at safe temperatures.”

Slide 48

### “Icky E. Coli”

Escherichia coli says:

“If you eat raw or rare ground beef, or drink raw (unpasteurized) milk or contaminated water, you may get to meet me...”

Slide 49

### “Icky E. Coli”

Escherichia coli says:

“I’m not much fun unless you don’t mind a little diarrhea, nausea, and vomiting for a couple of weeks. I may even throw in a low-grade fever, chronic kidney failure, or even cause death...”

Slide 50

### “Icky E. Coli”

Escherichia coli says:

“If you’d rather not make my acquaintance, store cold foods below 41°F, hold hot foods at 135°F or above, cook foods thoroughly, and practice proper sanitation techniques.”

Slide 51

### “Savage Sam”

Salmonella says:

“I’m a bacterium who’s always on the move- from the intestinal tracts of humans and animals to raw poultry, eggs, meat, and raw (unpasteurized) milk. I’ll hop a ride on your hands or a utensil, and spread to other foods...”

Slide 52

### “Savage Sam”

Salmonella says:

“Each year, I’m personally responsible for about 40,000 reported cases of stomach pain, diarrhea, nausea, chills, fever, and headaches...”

Slide 53

### “Savage Sam”

Salmonella says:

“There are only a few ways to stop me. I hate hot and cold, so keep hazardous foods below 41°F and cook them thoroughly. Also, be careful not to cross-contaminate, and avoid raw milk.”

Slide 54

### “Sinister Staph”

Staphylococcus aureus says:

“We love people. We hang around their skin, noses, and throats, and in infected cuts and pimples—just waiting for the chance to jump into foods high in protein, sugar, or salt...”

Slide 55

### “Sinister Staph”

Staphylococcus aureus says:

“We multiply rapidly where it's warm—like in prepared foods held at room temperature. Although it is possible to cook us to death, we can survive heat, refrigeration, and freezing...”

Slide 56

### “Sinister Staph”

Staphylococcus aureus says:

“You can prevent us from making people sick by:

- Covering open or infected wounds
- Washing your hands and utensils before preparing and serving food...

Slide 57

### “Sinister Staph”

Staphylococcus aureus says:

“You can prevent us from making people sick by:

- Thoroughly cooking foods
- Not touching body parts
- Refrigerating cooked foods that will not be served immediately...

Slide 58

### “Sinister Staph”

Staphylococcus aureus says:

“Watch out for us! We're tough characters.”

Slide 59

### “Voracious Viruses”

The viruses say:

“We viruses don't live IN food but we do move around the food service environment ON food and on surfaces that come in contact with food...”

Slide 60

### “Voracious Viruses”

The viruses say:

“When we get inside a human host, we can reproduce and cause illness. Poor personal hygiene or a contaminated water supply helps us spread...”

Slide 61

### “Voracious Viruses”

The viruses say:

“We may also infect people who eat raw or slightly cooked shellfish, such as oysters, mussels, and clams that have been illegally harvested from polluted water.”

Slide 62

### “Frightening Fungi”

The fungi say:

“Our species exists throughout the environment in many forms: mushrooms, mildew, molds, and yeasts...”

Slide 63

### “Frightening Fungi”

The fungi say:

“We’re all brothers, but the only fungi that spoil foods are molds and yeasts...”

Slide 64

### “Frightening Fungi”

The fungi say:

“Molds can spoil just about any food, causing discoloration and a bad flavor. Although it is rare, they may even produce a mild poison or toxin that can make people sick...”

Slide 65

### “Frightening Fungi”

The fungi say:

“Yeasts don’t cause illness, but they do like to cause bubbles and an alcoholic taste in sugary foods like jellies, honey, and fruit juices.”

Slide 66

### Factors Affecting the Growth of Microorganisms

Food  
Acidity  
Temperature  
Time  
Oxygen  
Moisture

Slide 67

### Factor 1: Food

- Microorganisms feed on
  - Protein
  - Carbohydrates
- Any food with these ingredients is potentially hazardous

Slide 68

### Potentially Hazardous Foods (PHF)

- Foods usually
  - High in protein
  - Moist
  - Moderately to slightly acidic
- All animal products
- Some vegetables and plant products

Slide 69

### Potentially Hazardous Foods (PHF)

- Meats, tofu, and other soy protein foods
- Poultry
- Seafood
- Dairy products
- Cooked rice, beans, and potatoes

Slide 70

### Potentially Hazardous Foods (PHF)

- Cooked pasta
- Heat treated plant foods
- Tomatoes
- Shell eggs
- Garlic in oil
- Raw seed sprouts or synthetic ingredients
- Cut melons

Slide 71

### Remember!

Any food that is handled improperly can become hazardous!

Slide 72

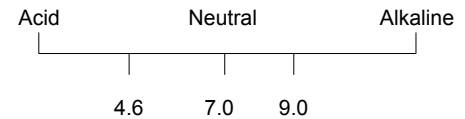
### Important!

- The California Retail Food Code recommends not serving at-risk people
  - A raw animal food  
(such as raw egg, raw steak, and raw fish or seafood even if marinated)
  - A partially cooked food  
(such as lightly cooked fish, soft cooked eggs, or rare meat other than whole-muscle, intact beef)

Slide 73

### Factor 2: Acidity

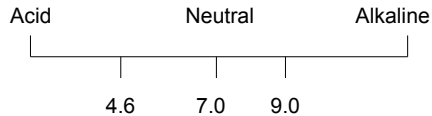
- pH
  - Indicates the acidity or alkalinity of a food
  - Measured on a scale from 1 to 14



Slide 74

### Acidity

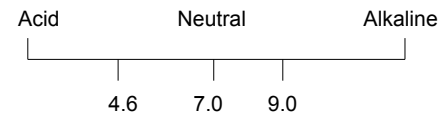
- Harmful bacteria grow at a pH range of 4.6 to 7.0.
- Milk, meat, and fish are in this range.



Slide 75

### Acidity

- Very acidic foods (below 4.6) will not normally support the growth of pathogens.
- Examples are lemons, limes, tomatoes, and pickled fruits and vegetables.



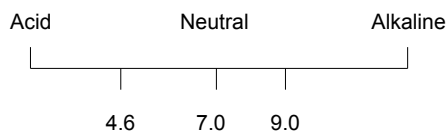
Slide 76

### Did you know?

Some strains of pathogenic bacteria can survive below pH 4.6, such as *E. coli* O157:H7

### Acidity

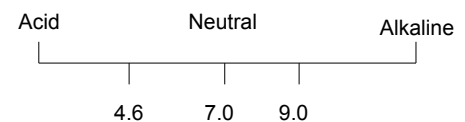
- Above 7.0, foods are alkaline.
- Examples are olives, egg whites, and soda crackers.



Slide 77

### Acidity

- Some bacteria may survive between 7.0 and 9.0.



Slide 78

### Factor 3: Temperature

- Temperature is measured in degrees
  - Fahrenheit (°F) or
  - Celsius (°C).
- All bacteria do not have the same temperature requirements for growth.

Slide 79

### Temperature Danger Zone

- 41°F to 135°F (5°C to 57°C)
- Below 41°F (5°C), few or no bacteria grow.
- Above 135°F (57°C), heat destroys most bacteria.
- “Keep it hot, keep it cold, or don’t keep it!”

Slide 80

### Temperature Abuse

- Occurs when foods have not been
  - heated to a safe temperature or
  - kept at the proper temperature.
- Could result in foodborne illness.

Slide 81

### Temperature Abuse

Time and temperature are the most critical factors affecting the growth of bacteria in food!

Slide 82

### Factor 4: Time

- Under ideal conditions, bacterial cells can double in number every 15 to 30 minutes.
- For most bacteria, a single cell can generate over one million cells in just 5 hours.

Slide 83

### Example

A food contains 1,000 organisms per gram

Time Lapsed	Number of Organisms
1 hour	4,000
2 hours	16,000
3 hours	64,000
4 hours	256,000
5 hours	1,024,000

Slide 84

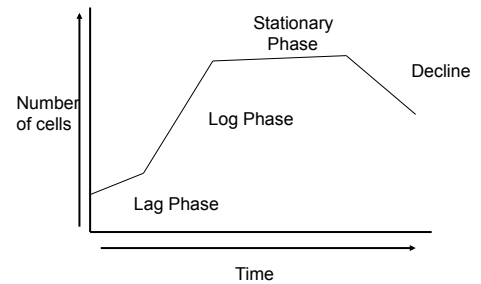


### Time

- Bacteria need about two hours to grow to high enough numbers to cause illness.
- The maximum time allowed in the temperature danger zone is four hours.
- The exposure to the temperature danger zone is cumulative.

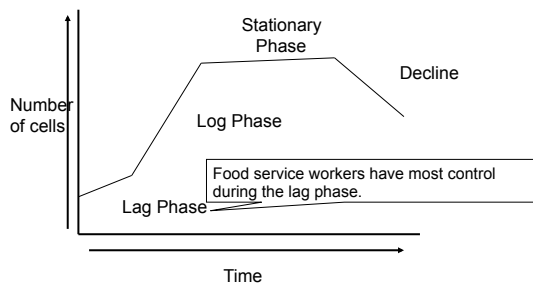
Slide 85

### Growth Curve



Slide 86

### Growth Curve



Slide 87

### Time

- It is important not to give bacteria an opportunity to multiply.
  - Proper storage
  - Proper handling of food

Slide 88

### Remember!

Do not allow potentially hazardous food to be in the temperature danger zone (41°F to 135°F) for more than 4 hours!

Slide 89

### Time

- The majority of foodborne illness can be traced to improper cooling of foods.
  - Food not cooled quickly enough
- Proper cooling has two stages for cooked and potentially hazardous foods (PHF):
  - From 135°F to 70°F within 2 hours
  - From 70°F to 41°F or below within 4 hours or more

Slide 90

### More Cooling Requirements

- PHF prepared from ingredients at room temperature:
  - Cool to 41°F or below within 4 hours
- PHF legally shipped from supplier at 41° F or above:
  - Cool to 41°F or below within 4 hours of receipt
- Raw shell eggs
  - Upon receipt, placed in refrigerator with ambient temperature of 45°F or below

Slide 91

### Factor 5: Oxygen

- Microorganisms have different needs for oxygen or air.
  - Some require oxygen to grow.
  - Others can only grow without oxygen.
  - Most will grow with or without oxygen.
- While oxygen affects bacteria growth, controlling it does not protect against foodborne illness.

Slide 92

### Oxygen

- Sous-vide and MAP packaging processes
  - May not destroy harmful bacteria and
  - Do not destroy spores.
- Most microorganisms that cause foodborne illness will grow with or without oxygen.

Slide 93

### MAP and Sous-Vide

MAP and sous-vide foods must be

- Refrigerated constantly (safe temperatures may need to be below 41°F),
- Heated according to time and temperature indicated on package, and
- Used by expiration date.

Slide 94

### Factor 6: Moisture

- Moisture is important to bacterial growth.
- It is not the percentage of water in food that bacteria use.
- It is the amount of available water.

Slide 95

### Water Activity

- Water activity ( $A_w$ ) is a measure of the amount of water that is not bound to the food and is therefore available for bacterial growth.
- Water activity ( $A_w$ ) is measured on a scale from 0 to 1.0.
- Disease causing bacteria can only grow in foods that have a water activity higher than .85.

Slide 96

### Water Activity

- Aw above .85
  - Dairy products
  - Poultry and eggs
  - Meats
  - Fish and shellfish
  - Cut produce
  - Steamed rice and pasta
- Aw .85 or below
  - Dry noodles
  - Dry rice and pasta
  - Flour
  - Uncut fruits and vegetables
  - Jams and jellies
  - Solidly frozen foods

Slide 97

### Moisture: Summary

- Fresh foods are ideal for bacterial growth.
  - Produce, milk, meat
- Low-moisture foods are resistant.
  - Cereal, jelly
- Dry foods are vulnerable when moisture is added, as in cooking.
  - Rice, beans, pasta

Slide 98

### Cross Contamination

- Harmful microorganisms can be transferred from one item to another by cross-contamination.

Slide 99

### Cross-Contamination

- Typical situation:
  - Microbes from a raw food are transferred to a cooked or ready-to-eat food by
    - Contaminated hands,
    - Equipment, or
    - Utensils.

Slide 100

### Cross-Contamination

- Food to food:
  - Salad placed on bottom shelf of refrigerator.
  - Thawing beef (raw) is stored on a higher shelf and drips into the uncovered salad.

Slide 101

### Cross-Contamination

- Hand to Food:
  - Food handler scratches body parts then proceeds to handle foods with bare hands.
  - Food handler does not wash hands after using the restroom and then proceeds to handle foods with bare hands.

Slide 102

### Important!

The California Retail Food Code requires that employees wear gloves when contacting food or food-contact surfaces if they have cuts, sores, artificial nails, etc.

Slide 103

### Cross-Contamination

- Equipment to Food:
  - Meat slicer used to slice raw meat and then used to slice turkey for cold sandwiches.
  - Knife and cutting board used to slice raw fish and then used to slice vegetables

Slide 104

### Prevent Biological Contamination By...

- Practicing good personal hygiene
- Controlling the time and temperature of foods
- Preventing cross-contamination

Slide 105

### Practice Good Personal Hygiene

- Food service workers should:
  - Follow good personal hygiene\*.
  - Always wash their hands properly.

\*This is discussed in lesson 3.

Slide 106

### Controlling Time and Temperature of Foods

- Do not leave food in the temperature danger zone (41°F to 135°F) for more than 4 hours.
- Cook foods to the proper internal temperature.
- Follow proper cooling and reheating procedures.

Slide 107

### Controlling Time and Temperature of Foods

- Thaw frozen foods correctly.
- Keep calibrated thermometers in the receiving, storing, food preparation, holding, and service areas.

Slide 108

### Controlling Time and Temperature of Foods

- Minimize the time food is in the temperature danger zone during receiving, storing, preparing, holding, and serving.

Slide 109

### Preventing Cross-Contamination

- Make sure the following are always clean and sanitized:
  - Food-contact surfaces
  - Equipment
  - Utensils
- Keep raw foods separate from cooked and ready-to-eat foods.

Slide 110

### Preventing Cross-Contamination

- In the refrigerator, store raw meats and other potentially hazardous foods below cooked and ready-to-eat foods.
- Prepare ready-to-eat foods before raw foods.
- Prepare raw and ready-to-eat foods in separate areas.

Slide 111

### Preventing Cross-Contamination

- Use separate equipment (i.e. cutting boards) for raw and ready-to-eat foods.
- Wash your hands properly.
- Have good personal hygiene.
- Use gloves properly.
- Do not work with food when you are sick.

Slide 112

### Irradiation

- Method of preserving food by exposing it to radiation
  - Reduces or eliminates pathogens
  - Delays food spoilage
- Label of irradiated food
  - Radura symbol
  - “Treated with Irradiation”
  - “Treated with Radiation”

Slide 113

### Preventing Chemical Contamination

- Store chemicals in original containers.
- Store chemicals in a locked metal cabinet when kept in the food storage area.
- Make sure labels display chemical hazards.
- Use Material Safety Data Sheets (MSDS) to make sure all chemicals are used correctly.
- Label chemicals moved from original containers.

Slide 114

### Preventing Chemical Contamination

- Wash hands after working with chemicals.
- Wash fresh vegetables and fruits with plain, potable water.
- Limit access to chemicals to authorized staff.
- Monitor the procedures of pest control operators to make sure that pesticides do not contaminate food.
- Always test sanitizing solutions.

Slide 115

### Preventing Chemical Contamination

- Purchase foods from reputable suppliers.
- Properly label and store medicine (kept in the food establishment for employee use) to prevent contamination of food, equipment, utensils, linen, and single-service and single-use items.

Slide 116

### Preventing Chemical Contamination from Metals

- Highly acidic foods, such as tomatoes or lemons, can react with metals during cooking or storage, causing the metal to contaminate the food.

Slide 117

### Preventing Chemical Contamination from Metals

- Use metal containers and metallic items for their intended use only.
- Avoid enamelware.
- Do not use lead, brass, copper, cadmium, and galvanized metal as food-contact surfaces for equipment, utensils, and containers.

Slide 118

### Preventing Chemical Contamination from Metals

- Do not use metal mixing bowls for holding hot foods.
- Never store food in an open can.
- Use only commercial food service equipment.
  - Use those following NSF or UL standards.

Slide 119

### Food Allergens

- Are classified as chemical contaminants
- Are foods that cause an allergic reaction in affected people
- Can be fatal

Slide 120

### Food Allergens

- Most common food allergens are eggs, milk, and peanuts.
- Inform food service employees of students with food allergies.

Slide 121

### Preventing Physical Contamination

- Clean can openers once or twice daily and change blades regularly.
- Use commercial scoops to scoop ice.
- Do not store items in the same ice used in foods or beverages.
- Place covers on lights.

Slide 122

### Preventing Physical Contamination

- Remove staples, nails, etc. from boxes when food is received.
- Do not repair equipment temporarily with items that might fall into food.
- Clean and sanitize equipment regularly.
- Store food only in containers or bags approved for food storage.
- Never reuse a single use container.

Slide 123

### Preventing Physical Contamination

- Do not wear false fingernails or nail polish.
- Do not wear jewelry and medical information jewelry other than a plain ring, such as a wedding band, when preparing food.
- Do not carry a pen or pencil behind the ear.
- Wear a hair restraint

Slide 124

### Review Questions

1. Which of the following does NOT explain why bacteria are the most common cause of foodborne disease in a food establishment?
  - a) Under ideal conditions, bacteria can grow very rapidly.
  - b) Bacteria are found naturally in many foods.
  - c) Bacteria can be easily transferred from one food source to another.
  - d) Bacteria need a host to survive.

Slide 125

### Review Questions

1. Which of the following does NOT explain why bacteria are the most common cause of foodborne disease in a food establishment?
  - a) Under ideal conditions, bacteria can grow very rapidly.
  - b) Bacteria are found naturally in many foods.
  - c) Bacteria can be easily transferred from one food source to another.
  - d) Bacteria need a host to survive.

Slide 126

## Review Questions

2. Most bacteria that cause foodborne illness grow:
- a) With or without oxygen between 41°F and 135°F.
  - b) Without oxygen between 41°F and 165°F.
  - c) With oxygen between 41°F and 135°F.
  - d) With or without oxygen between 41°F and 165°F.

Slide 127

## Review Questions

2. Most bacteria that cause foodborne illness grow:
- a) With or without oxygen between 41°F and 135°F.
  - b) Without oxygen between 41°F and 165°F.
  - c) With oxygen between 41°F and 135°F.
  - d) With or without oxygen between 41°F and 165°F.

Slide 128

## Review Questions

3. Which of the following organisms is most likely to cause foodborne illness in a food establishment?
- a) Salmonella
  - b) Cryptosporidium parvum
  - c) Anasakis
  - d) Trichanella spiralis

Slide 129

## Review Questions

3. Which of the following organisms is most likely to cause foodborne illness in a food establishment?
- a) Salmonella
  - b) Cryptosporidium parvum
  - c) Anasakis
  - d) Trichanella spiralis

Slide 130

## Review Questions

4. Bacteria grow best within a narrow temperature range called the temperature danger zone. The temperature danger zone is between:
- a) 0 °F and 220 °F
  - b) 32 °F and 135 °F
  - c) 41 °F and 135 °F
  - d) 41 °F and 165 °F

Slide 131

## Review Questions

4. Bacteria grow best within a narrow temperature range called the temperature danger zone. The temperature danger zone is between:
- a) 0 °F and 220 °F
  - b) 32 °F and 135 °F
  - c) 41 °F and 135 °F
  - d) 41 °F and 165 °F

Slide 132



## Review Questions

5. Bacteria that cause foodborne illness will only grow on foods that have a pH range of \_ to \_.
- a) 3.2 to 9.0
  - b) 4.6 to 7.0
  - c) 5.0 to 7.0
  - d) 7.0 to 9.0

Slide 133

## Review Questions

5. Bacteria that cause foodborne illness will only grow on foods that have a pH range of \_ to \_.
- a) 3.2 to 9.0
  - b) 4.6 to 7.0
  - c) 5.0 to 7.0
  - d) 7.0 to 9.0

Slide 134

## Review Questions

6. Bacteria that cause foodborne illness will only grow on foods that have a water activity (Aw) above \_.
- a) 0.85
  - b) 0.70
  - c) 0.46
  - d) 0.10

Slide 135

## Review Questions

6. Bacteria that cause foodborne illness will only grow on foods that have a water activity (Aw) above \_.
- a) 0.85
  - b) 0.70
  - c) 0.46
  - d) 0.10

Slide 136

## Review Questions

7. Why do some bacteria form spores?
- a) To reproduce
  - b) To move more easily from one location to another
  - c) To survive adverse environmental conditions
  - d) To survive without oxygen

Slide 137

## Review Questions

7. Why do some bacteria form spores?
- a) To reproduce
  - b) To move more easily from one location to another
  - c) To survive adverse environmental conditions
  - d) To survive without oxygen

Slide 138

### Review Questions

8. Which of the following is NOT considered a potentially hazardous food?
- a) Red meat
  - b) Fish and shellfish
  - c) Poultry and eggs
  - d) Dried rice

Slide 139

### Review Questions

8. Which of the following is NOT considered a potentially hazardous food?
- a) Red meat
  - b) Fish and shellfish
  - c) Poultry and eggs
  - d) Dried rice

Slide 140

### Review Questions

9. The most effective way to control the growth of bacteria in a food establishment is to control:
- a) Time and temperature
  - b) pH and oxygen conditions
  - c) Temperature and water activity
  - d) Water activity and food availability

Slide 141

### Review Questions

9. The most effective way to control the growth of bacteria in a food establishment is to control:
- a) Time and temperature
  - b) pH and oxygen conditions
  - c) Temperature and water activity
  - d) Water activity and food availability

Slide 142

### Review of Lesson Performance Standards

Slide 143

### Contrast the terms food contamination and food spoilage

Slide 144

### Contrast the terms food contamination and food spoilage

- Food contamination occurs when food has been exposed to a biological, chemical, or physical hazard, and is not usually detected by sight, smell, or taste.
- Food spoilage is damage to the edible quality of food, and is often easily detected by sight, smell, or taste.

Slide 145

Recognize common harmful microorganisms found in the food service environment that may cause foodborne illness

Slide 146

Recognize common harmful microorganisms found in the food service environment that may cause foodborne illness

- There are four main types of pathogens that contaminate food:
  - Bacteria
  - Parasites
  - Viruses
  - Fungi (yeasts and molds)

Slide 147

Identify the factors that affect bacterial growth

Slide 148

Identify the factors that affect bacterial growth

Food  
Acidity (pH)  
Temperature  
Time  
Oxygen  
Moisture

Slide 149

Define the temperature danger zone and the length of time a food can be safely held at these temperatures.

Slide 150

Define the temperature danger zone and the length of time a food can be safely held at these temperatures.

- **Temperature Danger Zone:**  
41°F (5°C) to 135°F (57°C)
- **Length of time:**  
Four hours

Slide 151

Describe the effect of acidity or alkalinity on bacterial growth and how this affects food handling and storage.

Slide 152

Describe the effect of acidity or alkalinity on bacterial growth and how this affects food handling and storage.

- Harmful bacteria grow at a pH range of 4.6 to 7.0.
- Very acidic foods (pH below 4.6) will normally not support the growth of disease-causing bacteria.
- Lowering the pH of foods by adding acidic ingredients might make them non-hazardous.
- Example: Pickling vegetables with vinegar

Slide 153

Explain the three ways cross-contamination may occur.

Slide 154

Explain the three ways cross-contamination may occur.

- **Food to Food:** Thawing beef is stored above an uncovered salad and drips into it.
- **Hand to Food:** Food handler scratches body and then handles food with bare hands.
- **Equipment to Food:** Meat slicer is used to slice raw meat and then to slice bologna for cold sandwiches without being washed.

Slide 155

Describe ways to prevent food contamination.

Slide 156

Describe ways to prevent food contamination.

- Keep foods at the proper temperature for the appropriate time.
- Keep food covered until use.
- Use utensils to move food.
- Do not touch ready-to-eat foods with your bare hands.
- Keep food areas clean.
- Do not wear jewelry.

Slide 157

Food Safety for Child Nutrition Programs

Thank You

Department of Nutrition  
University of California, Davis

Slide 158



## Lesson 3: Stopping Foodborne Illness Before It Starts

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## **Lesson Overview**



### **Lesson Competency**

Develop an understanding of techniques for preventing the spread of dangerous microorganisms, including safe and sanitary personal practices, and proper sanitizing of dishes, utensils, and equipment

### **Performance Standards**

- Recognize the difference between “clean” and “sanitary”
- Demonstrate two methods of sanitizing equipment
- Demonstrate the steps involved in properly sanitizing both portable and in-place equipment
- Apply sanitary personal practices for safe food service in the workplace
- Recognize what to do in case of a foodborne outbreak

### **Lesson Content**

#### **Cleaning Versus Sanitizing**

- Cleaning: Physical removal of dirt, food residues, and other visible soil
- Sanitizing: Treatment of a surface that has been cleaned to reduce the number of disease-causing microorganisms to safe levels

#### **Methods of Sanitation**

- Heat
- Chemical

#### **Types of Chemical Sanitizers**

- Chlorine
- Iodine
- Quaternary ammonium

### Things to Keep in Mind

- Sanitizing wiping cloths
- Dishwashing machines

### Proper Storage

- Chemicals
- Glasses and flatware

### Sanitizing Equipment

- Portable
- In-place

### Cleaning Frequency

- Equipment and utensils
- Food contact surfaces

### Personal Hygiene

- Personal best
- Proper attire
- Personal health

### Effective Handwashing

- Handwashing steps
- When to wash hands

### Proper Use of Disposable Gloves

- How to use gloves
- When to change gloves

### Outbreak! What to Do...

- Steps to take when an outbreak occurs

## **Vocabulary**

**Clean**—Free of dirt, food particles, or other visible soil

**Potable water**—Water that is safe to drink

**Sanitary**—Free of harmful levels of pathogens

**Sanitize**—To treat a surface that has been cleaned to reduce the number of disease-causing microorganisms to safe levels



## **Lesson 3 Worksheet**

Matching: *Draw a line from the definition to the correct word.*

**Definition****Word**

- |   |                  |
|---|------------------|
| 1. Free of dirt, food particles, or other visible soil  | A. Potable water |
| 2. Water that is safe to drink  | B. Sanitize      |
| 3. Free of harmful levels of pathogens  | C. Clean         |
| 4. To treat a surface that has been cleaned to reduce the number of disease-causing microorganisms to safe levels | D. Sanitary      |
| 5. The physical removal of dirt, food residues, and other visible soil  | E. Rinsing       |
| 6. The removal of cleaners  | F. Washing       |
7. The two methods of equipment sanitation are:
- I. \_\_\_\_\_
- II. \_\_\_\_\_
8. The California Retail Food Code specifies that food contact surfaces of equipment and utensils used with potentially hazardous food be cleaned at least every \_\_\_\_\_ hours when in constant use.
9. What are the proper steps in the manual dishwashing operation after scraping and pre-rinsing?
- a) Wash, rinse, sanitize, and towel dry
  - b) Rinse, wash, sanitize, and air dry
  - c) Wash, rinse, sanitize, and air dry
  - d) Rinse, wash, sanitize, and towel dry

10. When sanitizing with hot water in manual dishwashing, what should the temperature of the water in the final rinse be?
- a) 140° F
  - b) 171° F
  - c) 194° F
  - d) 212° F
11. Which of the following statements is **false**?
- a) In manual heat sanitizing, dishes must be immersed in water at 171 °F or above for at least 30 seconds.
  - b) Pre-scraping helps remove food from dishes, which helps the wash water clean the dishes.
  - c) Iodine is less corrosive than chlorine.
  - d) Sanitizing is a process that removes soil and prevents accumulation of food residues on equipment, utensils, and surfaces.
12. The recommended water temperature range for sanitizing solutions is between \_\_\_\_\_ and \_\_\_\_\_.
- a) 55 °F and 120 °F
  - b) 75 °F and 120 °F
  - c) 41 °F and 140 °F
  - d) 140 °F and 171 °F
13. The strength of a chemical sanitizer in manual dishwashing must be checked often because...
- a) If the chemical is too strong, it ruins dishes.
  - b) The chemical strength increases over time and leaves a toxic residue on equipment.
  - c) The strength of chemical sanitizers may drop off as pathogens are killed and the sanitizer is diluted with rinse water.
  - d) The chemical strength increases with time and could corrode the metal on equipment.
14. Which is not a recommended sanitizer for a food establishment?
- a) Chlorine
  - b) Iodine
  - c) Quaternary Ammonia Compounds
  - d) Ammonia

15. Which of the following statements is false?

- a) Keeping things clean is the responsibility of every person working in the food industry.
- b) To be sanitary, a piece of equipment must be free of all pathogens.
- c) Food service workers should not wear medical information jewelry while working with food.
- d) Food service workers should report any suspected foodborne illness to supervisors.





## Lesson 3 Slides

### Food Safety for Child Nutrition Programs

Department of Nutrition  
University of California, Davis

Slide 1

### Food Safety for Child Nutrition Programs

#### Lesson 3: Stopping Foodborne Illness Before It Starts

Slide 2

### Lesson Competency

- Develop an understanding of techniques for preventing the spread of dangerous microorganisms, including safe and sanitary personal practices as well as proper sanitizing of dishes, utensils, and equipment.

Slide 3

### Performance Standards

- Recognize the difference between clean and sanitary.
- Demonstrate two methods of sanitizing equipment.
- Demonstrate the steps involved in properly sanitizing both portable and in-place equipment.

Slide 4

### Performance Standards

- Apply sanitary personal practices for safe food service in the workplace.
- Recognize what to do in case of a foodborne outbreak.

Slide 5

### Vocabulary

- Clean: Free of dirt, food particles, or other visible soil.
- Potable water: Water that is safe to drink.
- Sanitary: Free of harmful levels of pathogens.
- Sanitize: To treat a surface that has been previously cleaned with a chemical solution to remove or reduce any disease-causing microorganisms to safe levels.

Slide 6

### Prevent Foodborne Illness By

1. **Recognizing** the critical control points and
2. **Taking specific steps** to counter them.

Slide 7

### Keep Harmful Microorganisms Under Control By

- Practicing good maintenance and good personal hygiene
- Keeping potentially hazardous foods out of the temperature danger zone
- Preventing cross-contamination

Slide 8

### Clean versus Sanitary

- A case study: Edna, a substitute employee, was washing pots and pans. She was concerned about making a good impression, so she made sure she had plenty of soap in the wash water. Then she scrubbed the equipment totally free of food particles and rinsed it in clean water in another sink.

Slide 9

### Clean versus Sanitary

- She changed the wash water and the rinse water to keep both looking clean. Then she went on to wash a knife and cutting board that had been used to chop ham for the salads.
- Did Edna do anything wrong?

Slide 10

### Wash, rinse, and sanitize

- **Washing** is the physical removal of dirt, food residues, and other visible soil.
- **Rinsing** is the removal of cleaners.
- **Sanitizing** is the treatment of a surface that has been previously cleaned to reduce the number of disease-causing microorganisms to safe levels.

Slide 11

### Washing

1. A detergent or other type of cleaner is brought into contact with the soil.
2. The soil is loosened from the surface being cleaned and disperses into the wash water.

Slide 12

### Rinsing

- The dispersed soil is rinsed away with the detergent (or cleaner) to prevent it from being redeposited onto the clean surface.

Slide 13

### Equipment Sanitation

#### Two Methods

- Heat
- Chemical

Slide 14

### Heat Method

- Manual
  - Immerse in water at 171 °F or above for at least 30 seconds.
- Dishwashing Machine
  - Maintain surface temperature at 160 °F or above by rinsing with water at no more than 194 °F and no less than
    - 165 °F for stationary rack, single temperature machines and
    - 180 °F for all other machines

Slide 15

### Heat Method: Advantages

- Can penetrate small cracks and crevices
- Is non-corrosive to metal surfaces
- Is not selective in the microorganisms it kills
- Leaves no residue
- Is easily measured

Slide 16

### Chemical Method

- Immersing objects in a sanitizing solution
- Spraying objects with a sanitizing solution
- Wiping objects down with a sanitizing solution

Slide 17

### Chemical Method

- Three types of chemicals
  - Chlorine
  - Iodine
  - Quarternary ammonium compounds (quats)

Slide 18

#### Did you notice?

Quaternary is misspelled in this slide. Oops!

### Effectiveness of Chemical Sanitizers

- Temperature of the water
  - Between 75°F and 120 F°
- Contact of the sanitizer
  - Intimate contact
- Selectivity of the sanitizer
  - Chlorine is relatively non-selective

Slide 19

### Effectiveness of Chemical Sanitizers

- Concentration of the sanitizer
  - More is not always better!
- pH of the solution
  - Rinse off detergents before sanitizing!
- Time of exposure
  - Allow sufficient time!

Slide 20

### Other Considerations

- Some sanitizers become less effective:
  - When they come into contact with particles of food.
    - Be sure to remove all food particles before sanitizing!
  - As they kill bacteria and are exposed to air.
    - Test the sanitizing solution frequently!

Slide 21

### Other Considerations

Use only EPA-approved sanitizers!

Slide 22

### Chlorine

- Use ½ ounce or 1 tablespoon of 5% bleach per gallon of water.
- Effectiveness depends, in part, on
  - The water temperature and
  - The pH of the solution.
- Purchase from an approved source

Slide 23

### Chlorine

#### Advantages

- Destroys a wide range of microorganisms
- Economical
- Good for most sanitizing applications
- Deodorizes and sanitizes

Slide 24

## Chlorine

### Advantages

- Non-toxic to humans when used at recommended concentrations
- Colorless and non-staining
- Easy to handle

Slide 25

## Chlorine

### Disadvantages

- Corrosive to equipment
- Irritates human skin and hands

Slide 26

## Iodine

- Chemically related to chlorine.
- Minimum exposure must be one minute.
- Use according to the manufacturer's instructions.

Slide 27

## Iodine

### Advantages

- Destroys a wide range of microorganisms
- Less corrosive to equipment than chlorine
- Kills microorganisms faster than chlorine or quats

Slide 28

## Iodine

### Advantages

- Less affected by food particles than chlorine
- Less irritating to the skin than chlorine
- Good for killing germs on the hands

Slide 29

## Iodine

### Disadvantages

- More expensive than chlorine
- Discolors and stains some surfaces
- Slippery and harder to handle than chlorine

Slide 30

### Quats

- Ammonia salts.
- Use according to the manufacturer's instructions.

Slide 31

### Quats

#### Advantages

- Effective sanitizers
- Non-corrosive
- Does not irritate the skin
- Leaves no taste or odor when properly diluted

Slide 32

### Quats

#### Advantages

- Stable at high temperatures
- Stable for a longer contact time
- Good as in-place sanitizers

Slide 33

### Quats

#### Disadvantages

- Very expensive
- Not as effective as chlorine and iodine
- May leave a film on the surface

Slide 34

### Things to Keep in Mind

- Properly sanitize cloths and sponges during and between uses. Sponges can not be used on cleaned and sanitized or in-use food contact surfaces.

Slide 35

### Things to Keep in Mind

- Dry or wet cloths used with **animal foods** must be kept separate from cloths used for other purposes.

Slide 36

### Things to Keep in Mind

- Wet cloths used with animal foods must be kept in a separate sanitizing solution that is kept at the proper concentration.

Slide 37

### Things to Keep in Mind

- Containers of sanitizing solutions for storage of in-use wiping cloths
  - May be placed above the floor
  - Must be used in a manner to prevent contamination of food, equipment, utensils, linens, and single-service or single-use items.

Slide 38

### Things to Keep in Mind

- The California Retail Food Code
  - Specifies that wiping cloths be laundered daily
  - Prohibits cloth-drying of equipment and utensils

Slide 39

### Things to Keep in Mind

- Dishwashing Machines
  - Check the detergent and sanitizer dispensers to make sure they are filled and working correctly.
  - Check the water temperature and pressure.
  - Keep the machine clean inside and out.
  - Do not overload dish racks.

Slide 40

### Storing

- Store chemicals in a locked cabinet away from food and food prep areas.
- Clean and sanitize drawers and shelves before storing cleaning items.
- Clean and sanitize the trays and carts used to transport clean items.

Slide 41

### Storing

- Store glasses and cups upside down.
- Store flatware and utensils with the handles up.

Slide 42

### Sanitizing Portable Equipment

- Clean and sanitize sinks and work surfaces.
- Scrape and rinse food into the garbage container or disposal.

Slide 43

### Sanitizing Portable Equipment

- Use a sink with 2-3 separate compartments and separate drain boards for clean and soiled items:
  - Wash
  - Rinse

Slide 44

### Sanitizing Portable Equipment

- Use a sink with 2-3 separate compartments and separate drain boards for clean and soiled items:
  - Sanitize
  - Air Dry

Slide 45

### Sanitizing Portable Equipment

Make sure all sanitized items are dry before storing in clean areas.

Slide 46

### Sanitizing In-Place Equipment

- Unplug equipment
- Remove food particles
- Wash, rinse, and sanitize removable parts by
  - Using the method for sanitizing portable equipment.

Slide 47

### Sanitizing In-Place Equipment

- **Wash** remaining food-contact surfaces, rinse with clean water, then wipe down with chemical **sanitizer**.
- Wipe down all other surfaces with a sanitized cloth.

Slide 48



### Sanitizing In-Place Equipment

- **Air dry** all parts before reassembling.
- Resanitize parts that were handled during reassembling.

Slide 49

### Sanitizing In-Place Equipment

- Scrub wooden surfaces (such as cutting boards) with a detergent solution and a stiff-bristled nylon brush.
  - Rinse in clear, clean water
  - Wipe down with a sanitizing solution.

Slide 50

### Cleaning Frequency

- **Equipment and utensils should be cleaned and sanitized:**
  - After each use
  - Before each use with a different type of raw animal food such as beef, fish, lamb, pork, or poultry

Slide 51

### Cleaning Frequency

- **Equipment and utensils should be cleaned and sanitized:**
  - Each time there is a change from working with raw foods to working with cooked or ready-to-eat foods
  - Between uses with raw fruits and vegetables and with potentially hazardous food

Slide 52

### Cleaning Frequency

- **Equipment and utensils should be cleaned and sanitized:**
  - Before using or storing a temperature measuring device
  - When interrupted during a task
  - When using something constantly
  - At any time during the operation when contamination may have occurred

Slide 53

### Cleaning Frequency

The California Retail Food Code specifies that food contact surfaces of equipment and utensils used with potentially hazardous food be cleaned at least every 4 hours when in constant use.

Slide 54

### Cleaning Frequency

- The California Retail Food Code requires that surfaces of utensils and equipment contacting food that is **NOT** potentially hazardous be cleaned:
  - At any time when contamination may have occurred.

Slide 55

### Cleaning Frequency

- The California Retail Food Code requires that surfaces of utensils and equipment contacting food that is **NOT** potentially hazardous be cleaned:
  - At least every 24 hours for
    - Iced tea dispensers and
    - Consumer self-service utensils (tongs, scoops, ladles, etc.)

Slide 56

### Cleaning Frequency

- The California Retail Food Code requires that surfaces of utensils and equipment contacting food that is **NOT** potentially hazardous be cleaned:
  - Before restocking consumer self-service equipment and utensils. Examples: condiment dispensers and display containers

Slide 57

### Personal Hygiene

Slide 58

### Personal Best

- Bathe daily.
- Wash hair frequently.
- Keep fingernails clean and trimmed.
- Treat and bandage wounds and open sores.
- Cover bandages on hands with gloves.

Slide 59

### Personal Best

- Wash hands properly, frequently, and at appropriate times.
- Wash hands before putting on gloves or changing into a new pair.
- Change gloves frequently and as needed.

Slide 60

### Proper Personal Attire

- Clean, appropriate clothing
- Clean apron
- Hair restraint

Slide 61

### Proper Personal Attire

- Comfortable, low-heeled, closed-toe shoes with non-slip soles
- Minimal or no jewelry

Slide 62

### Personal Health

- The California Retail Food Code requires employees to stop working if infected with any acute gastrointestinal illness or foodborne illness.

Slide 63

### Personal Health

- The person in charge of a kitchen should notify the main office that a food employee is ill.
- When a foodborne illness outbreak occurs and an employee is suspected of carrying the disease, the employee must not work until certified as safe.

Slide 64

### Effective Handwashing

1. Wet hands.
2. Apply soap.
3. Briskly rub hands for 10-15 seconds.
4. Scrub fingertips, fingernails, and between fingers.
5. Scrub forearms to just below elbows.

Slide 65

### Effective Handwashing

6. Rinse forearms and hands
7. Dry with a disposable paper towel.
8. Turn off water using the towel.
9. Turn doorknob and open door using paper towel.
10. Discard towel.

Slide 66

## Remember!

Warm water is more effective than cold water in removing the fatty soils found in kitchens.

Slide 67

## Hand Sanitizers

- Must be applied only to hands that have been properly cleaned
- Must be **approved drugs** listed in FDA's *Approved Drug Products with Therapeutic Equivalence Evaluations* or contain active **antimicrobial ingredients** listed in FDA's *OTC Health-Care Antiseptic Drug Products*

Slide 68

## Hand Sanitizers

- Must consist of components:
  - Listed in 21 CFR 178 as indirect food additives or
  - Exempt from regulations as food additives under 21 CFR 170.39 or
  - Generally recognized as safe for contact with food according to the Federal Food, Drug and Cosmetic Act

Slide 69

## Hand Sanitizers

- Or, must consist of components:
  - Permitted for use by an effective Food Contact Substance Notification and listed in FDA's Inventory of Effective Premarket Notifications for Food Contact Substances

Slide 70

## When to Wash Hands

- **Always wash hands:**
  - Upon reporting to work
  - Any time hands are soiled
  - Before
    - Beginning food preparation
    - Putting on disposable gloves
    - Serving

Slide 71

## When to Wash Hands

- **Always wash hands:**
  - After
    - Taking a break
    - Visiting the restroom
    - Coughing, sneezing, using a handkerchief or tissue, eating or drinking, using the phone, or smoking

Slide 72

### When to Wash Hands

- **Always wash hands:**
  - After
    - Handling inventory
    - Handling raw food and before switching to handling ready-to-eat food
    - Clearing or cleaning tables
    - Using cleaning chemicals

Slide 73

### When to Wash Hands

- **Always wash hands:**
  - After
    - Touching or scratching areas of the body, including ears, mouth, nose, and hair
    - Clearing, scraping, or washing dirty plates or utensils

Slide 74

### When to Wash Hands

- **Always wash hands:**
  - After
    - Removing trash and debris
    - Handling money
    - Touching dirty aprons, clothing, or surfaces

Slide 75

### When to Wash Hands

- **Always wash hands:**
  - After
    - Caring for or touching animals
    - Using a computer
    - Handling infants and children in childcare centers
    - Engaging in any activities that may contaminate the hands

Slide 76

### When Preparing Food Avoid

- Smoking, chewing gum, or eating
- Scratching the head or fixing hair
- Touching clothes or skin
- Wiping the mouth or nose with fingers
- Coughing or sneezing into food or hands
- Nibbling on food and eating and drinking in the food preparation area

Slide 77

### When Preparing Food Avoid

- Failing to wash hands as needed
- Washing hands in food preparation sinks
- Touching food-contact surfaces with bare hands
- Tasting food with hands or cooking spoons
- Tasting any food of animal origin when it is raw or being cooked

Slide 78

### Proper Use of Disposable Gloves

1. Wash and dry hands
2. Select gloves
3. Put on the gloves
4. Do the food handling task
5. Take off the gloves and discard them

Slide 79

### Proper Use of Disposable Gloves

- Treat gloves like a second skin
- Change gloves
  - If they are torn or soiled
  - If you begin to work with a different food
  - When your hands need to be washed

Slide 80

### Proper Use of Disposable Gloves

Never wash and reuse gloves!

Slide 81

### Outbreak! What to do...

#### Situation:

- Your worst nightmare is coming to life. The sixth-grade class went on a field trip, and your cafeteria provided reimbursable lunches to students who ordered them. The lunches were packed and picked up that morning and put on the bus. The students ate lunch around noon.

Slide 82

### Outbreak! What to do...

#### Situation:

- When the students returned to their classroom around two o' clock, a couple of them were complaining of nausea, headaches, and achy muscles. Wondering if this could have been caused by the lunch, the teacher tells the principal, who immediately comes to you.
- How should you respond?

Slide 83

### Outbreak! What to do...

- Keep your cool.
- Talk to your supervisor immediately.
- Stop serving the suspect food.
- Preserve the evidence.

Slide 84

### Outbreak! What to do...

- Gather information.
- Report your results.
- Secure treatment immediately.
- Direct all media inquiries to appropriate personnel.

Slide 85

### Outbreak! What to do...

- Outcome
  - As it turned out, there were no more reports of illness from the group of students, and the few who felt sick were better in the evening. It was decided that the illness was a result of all the day's activities.
  - If it had been foodborne illness, the kitchen manager would have had some very valuable information to help identify the illness and get prompt, proper treatment.

Slide 86

### Clean versus Sanitary

- A case study:
  - Edna, a substitute employee, was washing pots and pans. She was concerned about making a good impression, so she made sure she had plenty of soap in the wash water. Then she scrubbed the equipment totally free of food particles and rinsed it in clean water in another sink.

Slide 87

### Clean versus Sanitary

- She changed the wash water and the rinse water to keep both looking clean. Then she went on to wash a knife and cutting board that had been used to chop ham for the salads.
- Did Edna do anything wrong?

Slide 88

### Review Questions

1. What are the proper steps in the manual dishwashing operation after scraping and pre-rinsing?
  - a) Wash, rinse, sanitize, and towel dry
  - b) Rinse, wash, sanitize, and air dry
  - c) Wash, rinse, sanitize, and air dry
  - d) Rinse, wash, sanitize, and towel dry

Slide 89

### Review Questions

1. What are the proper steps in the manual dishwashing operation after scraping and pre-rinsing?
  - a) Wash, rinse, sanitize, and towel dry
  - b) Rinse, wash, sanitize, and air dry
  - c) Wash, rinse, sanitize, and air dry
  - d) Rinse, wash, sanitize, and towel dry

Slide 90

## Review Questions

2. When sanitizing with hot water in manual dishwashing, what should the temperature of the water in the final rinse be?

- a) 140° F
- b) 171° F
- c) 194° F
- d) 212° F

Slide 91

## Review Questions

2. When sanitizing with hot water in manual dishwashing, what should the temperature of the water in the final rinse be?

- a) 140° F
- b) 171° F
- c) 194° F
- d) 212° F

Slide 92

## Review Questions

3. Which of the following statements is false?

- a) In manual heat sanitizing, dishes must be immersed in water at 171 ° F or above for at least 30 seconds.
- b) Prescraping helps remove food from dishes, which helps the wash water clean the dishes.
- c) Iodine is less corrosive than chlorine.
- d) Sanitizing is a process which removes soil and prevents accumulation of food residues on equipment, utensils, and surfaces.

Slide 93

## Review Questions

3. Which of the following statements is false?

- a) In manual heat sanitizing, dishes must be immersed in water at 171 ° F or above for at least 30 seconds.
- b) Prescraping helps remove food from dishes, which helps the wash water clean the dishes.
- c) Iodine is less corrosive than chlorine.
- d) Sanitizing is a process which removes soil and prevents accumulation of food residues on equipment, utensils, and surfaces.

Slide 94

## Review Questions

4. The recommended range of water temperatures for sanitizing solutions is between \_\_\_\_ and \_\_\_\_.

- a) 55 ° F and 120 ° F
- b) 75 ° F and 120 ° F
- c) 41 ° F and 140 ° F
- d) 140 ° F and 171 ° F

Slide 95

## Review Questions

4. The recommended range of water temperatures for sanitizing solutions is between \_\_\_\_ and \_\_\_\_.

- a) 55 ° F and 120 ° F
- b) 75 ° F and 120 ° F
- c) 41 ° F and 140 ° F
- d) 140 ° F and 171 ° F

Slide 96



### Review Questions

5. The strength of a chemical sanitizer in manual dishwashing must be checked often because...
- a) If the chemical is too strong, it ruins dishes.
  - b) The chemical strength increases over time and leaves a toxic residue on equipment.
  - c) The strength of chemical sanitizers may drop off as pathogens are killed and the sanitizer is diluted with rinse water.
  - d) The chemical strength increases with time and could corrode the metal on equipment.

Slide 97

### Review Questions

5. The strength of a chemical sanitizer in manual dishwashing must be checked often because...
- a) If the chemical is too strong, it ruins dishes.
  - b) The chemical strength increases over time and leaves a toxic residue on equipment.
  - c) The strength of chemical sanitizers may drop off as pathogens are killed and the sanitizer is diluted with rinse water.
  - d) The chemical strength increases with time and could corrode the metal on equipment.

Slide 98

### Review Questions

6. Which is not a recommended sanitizer for a food establishment?
- a) Chlorine
  - b) Iodine
  - c) Quaternary Ammonia Compounds
  - d) Ammonia

Slide 99

### Review Questions

6. Which is not a recommended sanitizer for a food establishment?
- a) Chlorine
  - b) Iodine
  - c) Quaternary Ammonia Compounds
  - d) Ammonia

Slide 100

### Review Questions

7. Which of the following statements is false?
- a) Keeping things clean is the responsibility of every person working in the food industry.
  - b) To be sanitary, a piece of equipment must be free of all pathogens.
  - c) Food service workers should not wear medical information jewelry while working with food.
  - d) Food service workers should report any suspected foodborne illness to supervisors.

Slide 101

### Review Questions

7. Which of the following statements is false?
- a) Keeping things clean is the responsibility of every person working in the food industry.
  - b) To be sanitary, a piece of equipment must be free of all pathogens.
  - c) Food service workers should not wear medical information jewelry while working with food.
  - d) Food service workers should report any suspected foodborne illness to supervisors.

Slide 102

### Review of Lesson Performance Standards

Slide 103

Recognize the difference  
between clean and sanitary.

Slide 104

### Recognize the difference between clean and sanitary.

- **Clean** means free of dirt, food residues, and other visible soil.
- **Sanitary** means the number of disease causing microorganisms have been reduced to safe levels.

Slide 105

### Demonstrate two methods of sanitizing equipment.

Slide 106

### Demonstrate two methods of sanitizing equipment.

#### Method 1: Heat Method

- Manual: Immerse in water at 171 °F or above for at least 30 seconds.
- Dishwashing Machine: Maintains surface temperature at 160 °F or above by rinsing with water at no more than 194 °F and no less than
  - 165 °F for stationary rack, single temperature machines and
  - 180 °F for all other machines

Slide 107

### Demonstrate two methods of sanitizing equipment.

#### Method 2: Chemical Method

- Immerse, spray, or wipe down with a chemical solution:
  - Chlorine
  - Iodine
  - Quats

Slide 108

Demonstrate the steps involved in properly sanitizing both portable and in-place equipment

Slide 109

Demonstrate the steps involved in properly sanitizing both portable and in-place equipment

**Portable Equipment**

- Clean and sanitize sinks and work surfaces.
- Scrape and rinse food into garbage.
- Use a sink with 2 or 3 separate compartments and separate drain boards for clean and soiled items, wash, rinse, sanitize, and air dry.
- Make sure all sanitized items are dry before storing in clean areas.

Slide 110

Demonstrate the steps involved in properly sanitizing both portable and in-place equipment

**In-Place Equipment**

- Unplug equipment.
- Remove food particles.
- Wash, rinse, sanitize, and remove parts.
- Wash remaining food-contact surfaces, rinse with clean water, then wipe with sanitizer.
- Wipe down all other surfaces with a sanitized cloth.

Slide 111

Demonstrate the steps involved in properly sanitizing both portable and in-place equipment

**In-Place Equipment**

- Air dry all parts before reassembling.
- Resanitize parts that were handled during reassembling.
- Scrub wooden surfaces, rinse, and wipe down with a sanitizing solution.

Slide 112

Apply sanitary personal practices for safe food service in the workplace.

Slide 113

Apply sanitary personal practices for safe food service in the workplace.

- Good personal hygiene
- Appropriate dress
- Proper handwashing
- Proper use of disposable gloves

Slide 114

## Recognize what to do in case of a foodborne outbreak

Slide 115

## Recognize what to do in case of a foodborne outbreak

1. Keep your cool.
2. Talk to your supervisor immediately.
3. Stop serving the suspect food.
4. Preserve the evidence.
5. Gather information.
6. Report your results.
7. Secure treatment immediately.
8. Direct all media inquiries to the appropriate personnel.

Slide 116

## Food Safety for Child Nutrition Programs

Thank You

Department of Nutrition  
University of California, Davis

Slide 117

## Lesson 4: Creating a Safe & Sanitary Workplace

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## **Lesson Overview**



### **Lesson Competency**

Develop an understanding of the design and maintenance of a safe and sanitary food service facility, including preventing contamination by common pests and taking precautions to prevent accidents and injuries

### **Performance Standards**

- Describe the design characteristics of a safe and sanitary food service facility
- Identify common pests found in the food service environment
- Characterize the environments most liked by common pests
- Demonstrate methods for keeping pests away from food storage areas
- Identify common hazards to personal safety in the food service environment

### **Lesson Content**

#### Facility Design Characteristics

- Factors to consider in facility design

#### Floors

- Materials
- Coving
- Other requirements

#### Walls and Ceilings

- Materials
- Fixtures

#### Storage Shelves and Containers

- Materials
- Distance from wall and floor

#### Windows and Doors

- Tight-fitting
- Solid or screened

### Plumbing

- Prevent cross connection, backflow, back pressure, and back siphonage
- Devices: Air gap, vacuum breakers, double check valves

### Grease Traps

- Accessible for cleaning

### Restrooms

- Location
- Trash receptacles
- Separate restrooms for employees and customers

### Waste Management

- Trash storage
- Containers: leak-proof, waterproof, pest-proof, durable, easy to clean
- Outside storage and container requirements

### Ventilation Systems

- Design elements
- Checked regularly

### Lighting

- Design elements

**Learn more about the specific requirements for lighting in Appendix C!**

### Equipment Design Characteristics

- Meet the standards of National Sanitation Foundation (NSF), Underwriters Laboratory (UL) or American Gas Association (AGA)
- Consider the need for equipment, the cost, and the construction materials
- Ensure proper installation

### Maintaining a First-Rate Facility

- Regular cleaning schedule
- Clean floors, walls, and ceilings
- Clean serving lines and stations
- Clean food storage areas
- Clean restrooms
- Separate trash collection areas
- Ensure proper ventilation

### Common Pests

- Cockroaches
- Flies
- Rodents
- Moths and beetles

#### **Did you know?**

The German cockroach is the most common type found in kitchens.



### Preventing Infestation

- Lock them out
- Keep it clean
- Store it right

### In the Event of an Infestation

- Licensed pest control operators
- Only use pesticides and poisons allowed by the health department

### Exposure to Hazardous Chemical

- Material Safety Data Sheets
- Proper training
- Safety equipment
- Storage of chemical and cleaning supplies
- Separate sinks for handwashing, food preparation, warewashing, and cleaning mops and brushes

### Preventing Bioterrorism

- Only approved employees
- Visitor logs
- Policies and procedures in place for suspicious activity

## **Vocabulary**

**Backflow**—A backward flow of contaminated water, caused by back pressure or back siphonage, into a potable water supply

**Back pressure**—A type of backflow where contamination is forced into a potable water system through a connection that has a higher pressure than the water system

**Bioterrorism**—When harmful microorganisms are purposely put into food, water, etc. in order to make people sick and die

**Coving**—A curved, sealed 3/8-inch edge between the wall and the floor

**Cross connection**—Any physical link through which contamination from drains, sewers, or waste pipes can enter a potable water supply

**Garbage**—Waste that cannot be recycled

**Pest**—A troublesome animal or insect that often carries disease or filth into the food service environment

Learn more about Integrated  
Pest Management in  
Appendix D!

**Potable water**—Water that is safe to drink

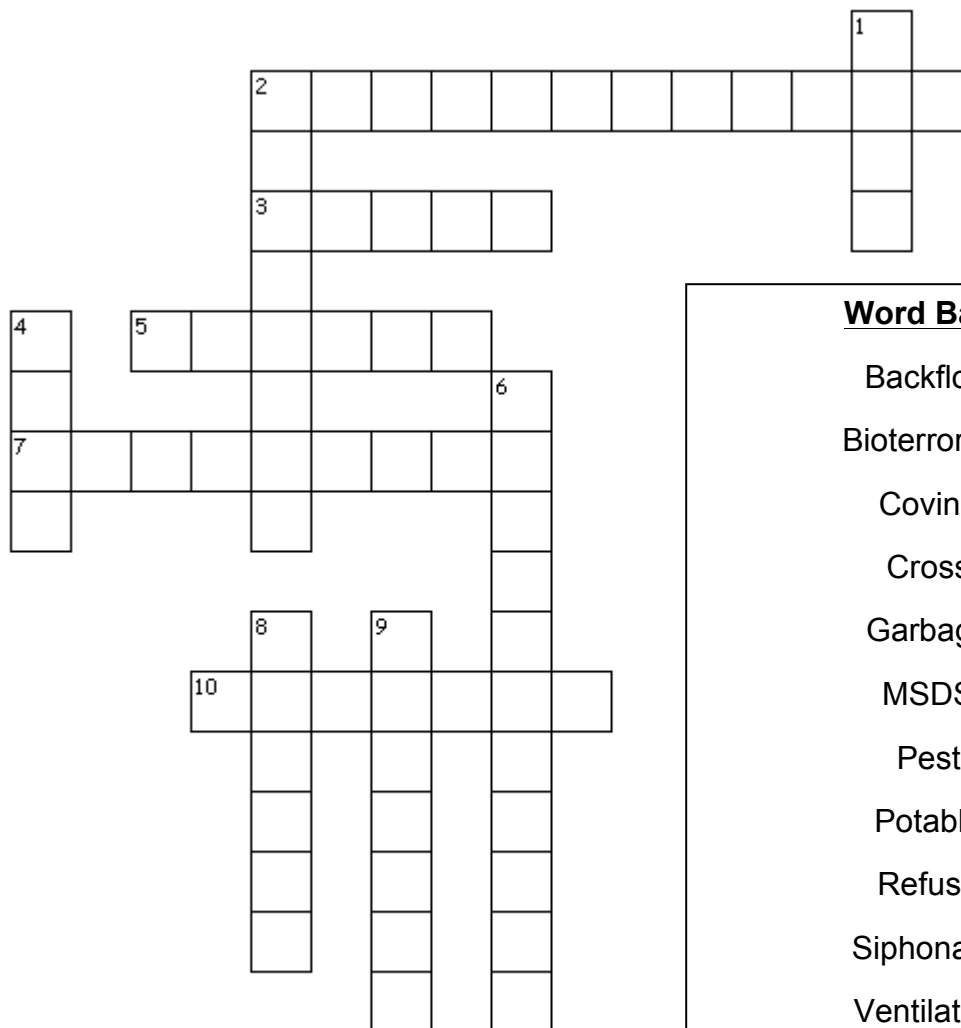
**MSDS**—Material Safety Data Sheet, a summary of important information about a chemical provided by the manufacturer, which must be kept where employees can find it

**Refuse**—Solid waste, which is not disposed of through the sewage system

**Ventilation**—A system of exhaust fans, hoods, and filters designed to remove steam, smoke, grease, heat, and airborne contaminants from the air around food preparation areas and equipment

## Lesson 4 Worksheet

1. Directions: Complete the crossword by filling in a word that fits each clue.



### Word Bank

Backflow  
 Bioterrorism  
 Coving  
 Cross  
 Garbage  
 MSDS  
 Pest  
 Potable  
 Refuse  
 Siphonage  
 Ventilation

#### Across

2. When harmful microorganisms are purposely put into food, water, etc. in order to make people sick and die  
 3. \_\_\_\_\_ Connection: Any physical link through which contaminants from drains, sewers, or waste pipes can enter a potable water supply  
 5. Solid waste, which is not disposed of through the sewage system  
 7. Back \_\_\_\_\_: A type of backflow that occurs when a loss of pressure in the water supply causes dirty water or chemicals to be sucked back into the potable water supply.  
 10. Water that is safe to drink

#### Down

1. Material Safety Data Sheet, a summary of important information about a chemical provided by the manufacturer and which must be kept where employees can find it  
 2. A backward flow of contaminated water, caused by back pressure or back siphonage, into a potable water supply

4. A troublesome animal or insect that often carries disease or filth into the food service environment
6. A system of exhaust fans, hoods, and filters designed to remove steam, smoke grease, heat, and airborne contaminants from the air around food preparation areas and equipment
8. A curved, sealed 3/8 inch-edge between the wall and the floor
9. Waste that cannot be recycled

2. A good floor plan can:

- A. Promote \_\_\_\_\_
- B. Minimize \_\_\_\_\_ traveled by employees
- C. Prevent \_\_\_\_\_ - \_\_\_\_\_

3. An \_\_\_\_\_ is the most dependable backflow prevention device.

4. Identify common pests found in the food service environment.

- I. \_\_\_\_\_
- II. \_\_\_\_\_
- III. \_\_\_\_\_
- IV. \_\_\_\_\_

5. Circle one: Do or Do Not install insect control devices over food preparation areas or in close proximity to exposed food and/or food-contact surfaces!

6. Which of the following statements is FALSE?

- a) Toilet facilities must be available for all employees.
- b) Employee toilet facilities must be conveniently located and accessible during working hours.
- c) Separate toilet facilities should be provided for men and women.
- d) Poor sanitation in toilet facilities will influence customer's opinions about cleanliness, but will not promote the spread of disease.

7. The most effective device for protecting the potable water system from contamination by backflow is a (an)...
- a) Air gap
  - b) Double check valve
  - c) Reduced pressure backflow preventer
  - d) Vacuum breaker
8. For air gaps, the vertical distance from the supply pipe (faucet) to the flood rim must be at least:
- a) Two times the diameter of the supply pipe, but never less than 1 inch.
  - b) Two times the diameter of the supply pipe, but never less than 2 inches.
  - c) Three times the diameter of the supply pipe, but never less than 1 inch.
  - d) Four times the diameter of the supply pipe, but never less than 2 inches.
9. Which of the following statements is FALSE?
- a) Proper disposal and storage of garbage is needed to prevent food contamination and avoid pests.
  - b) A trash receptacle must be provided in each area of the establishment where refuse is generated.
  - c) Garbage receptacles must be durable, clean, nonabsorbent, leak-proof, and pest-proof.
  - d) Trash may be stored outdoors in plastic bags provided the bags are stored at least 15 inches off the ground.
10. Which one of the following situations requires corrective action?
- a) A trash can with the lid off while in use
  - b) A handwashing station with a multi-use cloth towel for hand drying
  - c) Light colored ceramic tile being used for the walls of the food preparation area
  - d) Anti-slip flooring provided in the dishwashing area
11. Back siphonage is likely to occur if:
- a) The pressure in the potable water system drops below that of a non-potable or contaminated water source.
  - b) Contamination is forced into a potable water system through a connection that has a higher pressure than the water system.
  - c) Pressure builds up in a sewer line due to blockage.
  - d) The water seal in a kitchen trap is siphoned out.

12. The primary responsibility of food establishment managers in pest control is to ensure that:

- a) Everyone in the facility practices good sanitation principles that will prevent contamination of food and water, and eliminate areas for pests to hide.
- b) Pesticides are applied by licensed operators.
- c) The pest control operator they use employs integrated pest management.
- d) The garbage area is kept free of litter.

13. The best way to encourage employees to wash their hands when needed is to:

- a) Provide separate restrooms for employees and for customers.
- b) Provide handwashing stations near work areas.
- c) Provide hand sanitizers instead of handwashing lavatories in food preparation areas.
- d) Put up a sign in the employee locker room reminding them of proper handwashing.

14. Coving is a (an):

- a) Curved sealed edge between the floor and wall that eliminates sharp corners to make cleaning easier.
- b) Anti-slip floor covering used to protect workers from slips and falls.
- c) Plastic material used to seal cracks and crevices under and around equipment in a food establishment.
- d) Device used to prevent back siphonage.

## Lesson 4 Slides

### Food Safety for Child Nutrition Programs

Department of Nutrition  
University of California, Davis

Slide 1

### Food Safety for Child Nutrition Programs

#### Lesson 4: Creating a Safe and Sanitary Workplace

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### Lesson Competency

- Develop an understanding of the design and maintenance of a safe and sanitary food service facility, including preventing contamination by common pests and taking precautions to prevent accidents and injuries.

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### Performance Standards

- Describe the design characteristics of a safe and sanitary food service facility.
- Identify common pests found in the food service environment.
- Characterize the environments most liked by common pests.

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### Performance Standards

- Demonstrate methods for keeping pests away from food storage areas.
- Identify common hazards to personal safety in the food service environment.

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### Vocabulary

- Backflow: A backward flow of contaminated water into a potable water supply. It is caused by back pressure or back siphonage.
- Back pressure: A type of backflow where contamination is forced into a potable water system through a connection that has a higher pressure than the water system.

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### Vocabulary

- Back siphonage: A type of backflow that occurs when a loss of pressure in the water supply causes dirty water or chemicals to be sucked back into the potable water supply.
- Bioterrorism: When harmful microorganisms are purposely put into food, water, etc. in order to make people sick and die.

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### Vocabulary

- Coving: A curved, sealed 3/8 inch-edge between the wall and the floor.
- Cross Connection: Any physical link through which contaminants from drains, sewers, or waste pipes can enter a potable water supply.
- Garbage: Food waste that cannot be recycled.

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### Vocabulary

- Pest: A troublesome animal or insect that often carries disease or filth into the food service environment.
- Potable water: Water that is safe to drink.
- MSDS: Material Safety Data Sheet, a summary of important information about a chemical provided by the manufacturer and which must be kept where employees can find it.

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### Vocabulary

- Refuse: Solid waste which is not disposed of through the sewage system.
- Ventilation: A system of exhaust fans, hoods, and filters designed to remove steam, smoke grease, heat, and airborne contaminants from the air around food preparation areas and equipment.

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### Facility Design Characteristics

- |                                  |                       |
|----------------------------------|-----------------------|
| • Workflow patterns              | • Plumbing            |
| • Floors                         | • Grease traps        |
| • Walls and ceilings             | • Restrooms           |
| • Storage shelves and containers | • Waste management    |
| • Windows and doors              | • Ventilation systems |
|                                  | • Lighting            |

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### Workflow Patterns

A good floor plan can:

- Promote safety
- Minimize distances traveled by employees
- Prevent cross-contamination

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## Workflow Patterns

A good workflow plan prevents clean and soiled items from crossing paths during food production and service.

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## Floors, Walls, and Ceilings

Factors to consider in the design of floors, walls, and ceilings:

- Sanitation
- Safety
- Durability
- Comfort
- Cost

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## Floors

Made of non-skid, nonabsorbent material such as:

- Marble, terrazzo, quarry, or asphalt tiles, or
- Seamless concrete treated with sealants (not paint)

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## Floors

- Must have coving (a curved sealed edge between wall and floor) installed
- Must withstand strong chemical cleaners and items being dropped

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## Floors

In food production and warewashing areas, do NOT use:

- Wood
- Vinyl
- Carpeting

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## Floors

FDA *Food Code* recommends not using carpeting in...

- Food preparation areas
- Walk-in refrigerators
- Warewashing areas
- Toilet room areas where handwashing lavatories, toilets, and urinals are located
- Refuse storage rooms or other areas subject to moisture

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### Walls and Ceilings

- Easily cleanable, nonabsorbent surface,
  - such as epoxy or enamel paint, stainless steel, or glazed tile
- No cracks, holes, chipped paint, etc.
- Light color to reflect light and easily show soil
- Fixtures easy to clean, firmly mounted, and in good repair

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### Storage Shelves and Containers

- Corrosion resistant, easily cleanable material
  - such as stainless steel or food-grade plastic
- Containers covered and labeled with contents and use-by dates

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### Storage Shelves and Containers

- Shelves
  - 6 inches from walls
  - 6 inches off the floor
  - Slatted
  - Wide enough to promote air circulation
- Cold storage shelves not lined with aluminum, paper, or any other material

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### Windows and Doors

- Tight-fitting, self-closing doors
- Solid or screened
- Kept shut whenever possible
- Frosted glass in storage areas to prevent damage to food quality

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### Plumbing

A plumbing system includes:

- Water supply and distribution pipes
- Plumbing fixtures and traps
- Soil, waste, and vent pipes
- Sanitary and storm sewers
- Building drains, including their connections and devices within the building and at the site

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### Plumbing

- Clean water supply
- Drains designed to prevent any cross-connection via
  - an air gap
  - vacuum breaker
  - backflow prevention device

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### Cross-Connection

- A cross-connection is any physical link through which contaminants from drains, sewers, or waste pipes can enter a potable (safe to drink) water supply.

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### Backflow

- Backflow is the backward flow of contaminated water (via a cross-connection) into a potable water supply.
- It occurs when the pressure in the water system drops below that of the contaminated water supply.

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### Back Pressure

- When contamination is forced into a potable water system through a connection that has a higher pressure than the water system

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### Back Siphonage

- When there is reduced pressure or a vacuum formed in the water system
- Possible causes
  - a water main break
  - the shut-down of a portion of the system for repairs
  - heavy water use during a fire

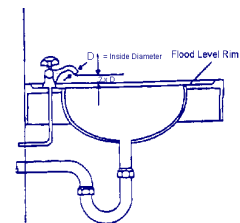
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### Preventing Backflow: Air Gap

An air gap is the most dependable backflow prevention device.

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### Preventing Backflow: Air Gap



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### Preventing Backflow: Air Gap

- With an air gap, the vertical distance between the supply pipe (faucet) and the flood rim must be...
  - 2 times the diameter of the supply pipe, but,
  - never less than 1 inch.

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### Preventing Backflow: Other Devices

- Atmospheric vacuum breakers
- Double check valves
- Reduced pressure principle backflow preventers

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### Grease Traps

- A grease trap must be located for accessible cleaning.
- Failure to locate a grease trap so it can be properly cleaned and maintained can result in...
  - sewage system failure or
  - pests.

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### Restrooms

- Convenient, but separate from the kitchen
- Located so customers do not pass through food preparation areas to access restrooms
- Available to all employees with separate facilities for men and women
- With separate, covered trash receptacles for paper towels and feminine sanitary products

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### Restrooms

There should be separate restrooms for employees and customers.

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### Restrooms

Never store food in restroom areas!

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### Waste Management

- Refuse is solid waste which is not disposed of through the sewage system.
- Garbage is food waste that cannot be recycled.

Proper management of these wastes decreases attraction of insects, rodents, and other pests to the food establishments

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### Waste Management

- Trash must be kept away from food preparation and storage areas.
- Trash containers should be located where...
  - refuse is generated and
  - recyclables and returnables accumulate.

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### Waste Management

- Containers for trash, recyclables, and returnables must be:
  - Leak-proof
  - Waterproof
  - Pest-proof
  - Durable
  - Easy to clean

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### Waste Management

- Outside containers must have tight-fitting lids, doors, or covers.
- Garbage should be tightly sealed in double strength plastic bags before being placed in a dumpster.

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### Waste Management

- Containers must be...
  - Kept covered
    - If they contain garbage
    - After they are filled
  - Cleaned regularly.

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### Waste Management

- Food establishments need an outside storage area and enclosure to hold refuse, recyclables, and returnables.

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### Waste Management

- Compactors and other equipment for refuse, recyclables, and returnables must be installed to minimize the accumulation of debris.

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### Waste Management

- The outside storage surface should...
  - be sloped to drain so that waste water will not pool and attract insects and rodents and
  - have a surface that is smooth, nonabsorbent, durable, cleanable, and maintained in good repair.

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### Waste Management

- Outside storage areas must be...
  - Kept clean
  - Free of litter
- Suitable cleaning equipment and supplies must be available to clean the equipment and receptacles.

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### Waste Management

- Refuse storage equipment and receptacles must have:
  - Drains
  - Drain plugs
- The area around and under the units must be kept clean.

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### Ventilation Systems

- Ventilation systems should be designed to:
  - Remove steam, smoke, and heat from food preparation areas
  - Eliminate condensation and other airborne contaminants
  - Reduce dirt, odors, gases, and fumes
  - Reduce mold growth by reducing humidity

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### Ventilation Systems

- Hoods should be built and used over cooking areas and dishwashing machines.
- Ventilation ducts, steam pipes, water lines, and conduits should NOT be exposed.
- Outside air intakes must be screened to keep out pests.

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### Ventilation Systems

- Ventilation systems should be...
  - checked regularly for proper functioning, and
  - serviced as needed.

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### Lighting

- Bright enough to reveal dirt and stains
- Positioned so that workers do not cast shadows on their work
- Well-mounted
- Positioned or protected (with covers, shatter proof bulbs) so broken glass cannot fall into food or supplies

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**Learn more about the specific requirements for lighting in Appendix C!**

### Equipment Design Characteristics

- |  |                                 |
|--|---------------------------------|
| • Design                                     | • Size                          |
| • Construction                               | • Cost                          |
| • Materials                                  | • Safety                        |
| • Installation                               | • Overall ability to do the job |
| • Durability                                 |                                 |
| • Ability to be easily cleaned and sanitized |                                 |

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### Equipment Design Characteristics

- Equipment in food establishments should meet the standards of:
  - National Sanitation Foundation (NSF) International
  - Underwriters Laboratories Inc. (UL)
  - American Gas Association (AGA)

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### Equipment Design Characteristics

- Consider the need for equipment
  - How it will improve the quality of the food
  - If it will reduce labor and material costs
  - If it will improve sanitation
  - If it will contribute to the bottom line of the establishment

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### Equipment Design Characteristics

- Consider the cost of the equipment
  - Purchase costs
  - Installation costs
  - Operation costs
  - Maintenance costs
  - Finance costs

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### Equipment Design Characteristics

- Construction Materials
  - Smooth
  - Seamless
  - Easy to clean
  - Easy to take apart
  - Easy to reassemble
  - Equipped with rounded corners and edges

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### Equipment Design Characteristics

- Construction Materials
  - Nontoxic
  - Does not give odors, colors, or tastes to food
  - Safe
  - Durable
  - Corrosion-resistant
  - Nonabsorbent

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### Equipment Design Characteristics

- Construction Materials
  - Heavy and thick enough to withstand repeated washing
  - Resistant to...
    - Chipping
    - Pitting
    - Scratching
    - Deterioration

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### Equipment Design Characteristics

- Materials that meet the criteria
  - Metals
    - Chromium over steel
    - Non-corrosive alloys of iron, nickel, and chromium
  - Stainless Steel
    - The preferred material

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### Equipment Design Characteristics

- Materials that meet the criteria
  - Plastics
    - Acrylics, melamines, fiberglass
    - Other food-grade plastics

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### Equipment Design Characteristics

- Materials that do NOT meet the criteria:
  - Lead
  - Brass
  - Copper
  - Cadmium
  - Galvanized metal

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### Equipment Design Characteristics

- Materials that do NOT meet the criteria:
  - Wood
    - Exception: Hard wood may be used to make
      - ♦ cutting boards and blocks
      - ♦ baker's tables
      - ♦ paddles for candy and pizza

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### Equipment Design Characteristics

- Equipment Size, Design, and Placement
  - Must fit space available
  - Must fit workflow to
    - Minimize exposure to the temperature danger zone
    - Reduce chances of cross-contamination
    - Provide room for easy cleaning and sanitizing

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### Equipment Design Characteristics

- Cutting Boards
  - Of sanitizable material, preferably food-grade plastic
  - Flat/level
  - Able to be secured during use
  - Proper size

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### Equipment Design Characteristics

- Dishwashing Machines
  - Proper size for the facility
  - Able to sanitize items washed through hot water supply (with booster heater) or chemical dispensing system

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### Equipment Design Characteristics

- Dishwashing Sinks
  - Sufficient space to hold soiled items and air dry sanitized items
  - Compartments large enough to hold largest pots/equipment in use
  - Preferably three compartments
  - Hot and cold water supply to each compartment

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### Equipment Design Characteristics

- Ice Machines
  - Scoop stored so hands do not touch ice
  - Drain line equipped with air gap
  - Easily cleaned and sanitized

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## Equipment Design Characteristics

- Slicers and Mixers
  - Easily disassembled for cleaning
  - Anchored to table or floor
  - With safety guards to protect hands

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## Equipment Design Characteristics

- Installation
  - Proper installation is crucial
  - Establishment must have proper
    - Plumbing
    - Electrical Wiring
    - Ventilation

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## Equipment Design Characteristics

- Installation
  - Local codes must be followed regarding
    - Building
    - Plumbing
    - Electrical Wiring
    - Health
    - Fire Safety

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## Equipment Design Characteristics

- Installation
  - Equipment must be installed with cleaning in mind
    - Floor equipment must be
      - Mounted on legs at least 6 inches off the floor or
      - Sealed to the floor on a masonry base

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## Equipment Design Characteristics

- Installation
  - Equipment must be installed with cleaning in mind
    - If not easily movable, tabletop equipment must be...
      - Mounted on 4 inch legs
      - Sealed to the table with a nontoxic, food-grade sealant

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## Equipment Design Characteristics

- Installation
  - All employees should be trained on how to operate, care for, and clean the equipment.

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### Maintaining a First-Rate Facility

- Regular Cleaning Schedule
  - Schedule a time for regular cleaning
  - Appoint a person responsible for the cleaning.

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### Maintaining a First-Rate Facility

- Regular Cleaning Schedule
  - Never use handwashing, food preparation, and dishwashing sinks for cleaning the facility.

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### Maintaining a First-Rate Facility

- Floors, Walls, and Ceilings
  - Keep free of dirt, litter, and moisture.
  - Swab or spray walls.
  - Sweep and either spray or mop floors.
  - Swab ceilings.
  - Clean light fixtures.
  - Clean corners and hard-to-reach places.
  - Clean spills immediately.

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### Maintaining a First-Rate Facility

- Serving Lines and Serving Stations
  - Clean and sanitize the hot and cold wells after each meal.
  - Clean and sanitize dispensers, such as beverage dispensers.
  - Clean and sanitize milk coolers.
  - Clean up spills immediately.

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### Maintaining a First-Rate Facility

- Serving Lines and Serving Stations
  - Make sure students use clean plates when going back through self-serve stations.
  - Maintain a sneeze guard over foods.
  - Make sure single-use utensils are individually wrapped.

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### Maintaining a First-Rate Facility

- Food Storage Areas
  - Keep clean and litter-free.
  - Routinely sweep and scrub the walls, ceilings, floors, shelves, light fixtures, and racks.
  - Store cleaning supplies and chemicals in a separate area away from food and other chemicals.

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### Maintaining a First-Rate Facility

- Food Storage Areas
  - Check often for
    - Damaged or spoiled foods
    - Broken or torn packages
    - Bulging or leaking cans
    - Pest infestation

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### Maintaining a First-Rate Facility

- Food Storage Areas
  - Remove any potentially spoiled foods immediately and clean the area.
  - Store items at least 6 inches from the walls and above the floors.

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### Maintaining a First-Rate Facility

- Restrooms
  - Clean daily and keep the doors closed.
  - Remove the trash daily.
  - Keep well-stocked.
  - Make sure they have a trash container with a lid that opens with a foot pedal.

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### Maintaining a First-Rate Facility

- Trash Collection Areas
  - Keep inside garbage away from food preparation areas.
  - Do not allow trash to accumulate anywhere except in garbage storage areas.
  - Empty trash containers often.

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### Maintaining a First-Rate Facility

- Trash Collection Areas
  - Clean and sanitize trash containers often, both inside and out.
  - Keep outside garbage areas clean.
  - Keep receptacles closed when full or not in use.

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### Maintaining a First-Rate Facility

- Ventilation
  - Use hoods and exhaust fans over cooking areas and dishwashing equipment.
  - Check exhaust fans and hoods regularly to make sure they are clean and operating properly.
  - Clean hood filters routinely according to manufacturer's instructions.

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### Common Pests

- Cockroaches
  - Roaches search out places that are dark, warm, moist, and hard to clean.
  - The hairy legs of roaches can leave a trail of debris and disease-causing organisms.
  - One female cockroach can produce millions of offspring in a lifetime.

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#### Did you know?

The German cockroach is the most common type found in kitchens.

### Common Pests

- Flies
  - Flies feed on human and animal wastes and garbage.
  - When they land on food, flies contaminate it with bacteria from their mouths, footpads, hair, and feces.
  - Flies can enter a building through holes the size of a pinhead.

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### Common Pests

- Rodents
  - Rodents carry many disease causing organisms and parasites that can be transmitted to people.
  - One fecal dropping can contain several million bacteria.
  - Rodents can produce as many as 50 offspring in a one-year life-span.

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### Common Pests

- Moths and Beetles
  - Moths and beetles invade certain foods and can do extensive damage.
  - These foods include corn, rice, wheat, flour, beans, sugar, meal, and cereals.

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### Common Pests

- Moths and Beetles
  - To control moths and beetles in stored foods:
    - Use proper stock rotation
    - Either use all opened packages immediately or store in covered containers
    - Clean shelves and floors frequently
    - At receiving, examine foods for signs of infestation

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### Common Pests

- Moths and Beetles
  - To control moths and beetles in stored foods:
    - Keep infested food products away from other food
    - Keep dry food storage areas cool
    - If you have to use insecticides, avoid contaminating food

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### Lock Them Out!

- Fill openings or cracks in walls and floors with putty, plastic, wood, or a similar product.
- Fill openings around pipes or equipment fittings.
- Screen windows, doors, and outer openings and keep them in good repair.
- Use self-closing doors that open outward.

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**Learn more about Integrated  
Pest Management in  
Appendix D!**

### Lock Them Out!

- Install an air curtain at food service entrances.
- Inspect food supplies before storing or using them.

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### Keep it Clean!

- Clean up spills immediately.
- Pick up crumbs and other food scraps pronto!
- Put all garbage in garbage cans with lids.

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### Keep it Clean!

- Dispose of garbage properly and promptly.
- Dispose of mop and cleaning bucket water properly.
- Keep all supplies clean, dry, and properly stored.
- Clean all grease traps regularly.

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### Store it Right!

- Keep food in labeled containers approved for food storage with tight-fitting lids.
- Store food and containers 6 inches off the floor.
- Remove and destroy any infested food.
- Store food in areas with proper temperatures.

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### Caution!

Do NOT install insect control devices over food preparation areas or in close proximity to exposed food and/or food-contact surfaces!

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### In the Event of an Infestation

- You may need chemicals to get rid of pests.
- Use only pesticides and poisons allowed by the health department.
- Only licensed pest control operators should apply pesticides at your establishment.

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### In the Event of an Infestation

Remember: Only use approved pesticides and poisons.

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### Exposure to Hazardous Chemicals

- The Occupational Safety and Health Administration (OSHA) requires that employees know about the hazardous chemicals to which they may be exposed to on the job.
- Material Safety Data Sheets
  - supplied by manufacturers
  - must be kept on file and accessible to employees

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### Exposure to Hazardous Chemicals

Information in the MSDS includes...

- Chemical name of product
- Ingredients
- Physical and chemical characteristics
- Fire, explosion, reactivity, and health hazard data
- How to handle hazardous chemicals safely
- How to use personal protective equipment and other devices to reduce risk
- Emergency procedures to use if required

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### Exposure to Hazardous Chemicals

- Only properly trained workers should handle hazardous chemicals.
- Employees should have safety equipment to use when working with hazardous chemicals.

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### Exposure to Hazardous Chemicals

- Employees should wear nonporous gloves and eye goggles when working with sanitizing agents and other cleaners.

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### Exposure to Hazardous Chemicals

- Cleaning equipment should be stored in areas away from where food and utensils are stored.
- Cleaning supplies should be stored in a separate room.

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### Exposure to Hazardous Chemicals

- Chemicals used for cleaning and pest control must be stored in a locked and labeled cabinet to avoid accidental contamination of food and food-contact surfaces.

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### Exposure to Hazardous Chemicals

- There should be a separate sink to...
  - Fill and empty mop buckets
  - Rinse and clean mops
  - Clean brushes and sponges

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### Exposure to Hazardous Chemicals

- Handwashing, food preparation, and warewashing sinks must never be used for cleaning mops and brushes.

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### Exposure to Hazardous Chemicals

- A “janitor’s” sink or floor drain should be provided to dispose of waste water produced by cleaning activities.

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### Bioterrorism

- Bioterrorism occurs when harmful microorganisms are purposely put into food, water, etc. in order to make people sick and die.

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### Help Prevent Bioterrorism

- Allow only approved employees into production areas (photo ID).
- Do not allow anyone who is not assigned to food production to enter a food production area.
- Make visitors use sign-in and sign-out logs.
- Establish policies for visitors to keep your facility secure.

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### Help Prevent Bioterrorism

- Do not allow anyone to bring personal items into processing areas.
- Agencies and school districts should have policies and procedures in place if anyone sees suspicious activity and train employees on these policies, including who to contact.

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### Review Questions

1. Which of the following statements is FALSE?
- Toilet facilities must be available for all employees.
  - Employee toilet facilities must be conveniently located and accessible during working hours.
  - Separate toilet facilities should be provided for men and women.
  - Poor sanitation in toilet facilities will influence customer's opinions about cleanliness, but will not promote the spread of disease.

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### Review Questions

1. Which of the following statements is FALSE?
- Toilet facilities must be available for all employees.
  - Employee toilet facilities must be conveniently located and accessible during working hours.
  - Separate toilet facilities should be provided for men and women.
  - Poor sanitation in toilet facilities will influence customer's opinions about cleanliness, but will not promote the spread of disease.

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### Review Questions

2. The most effective device for protecting the potable water system from contamination by backflow is a (an)...
- Air gap
  - Double check valve
  - Reduced pressure backflow preventer
  - Vacuum breaker

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### Review Questions

2. The most effective device for protecting the potable water system from contamination by backflow is a (an)...
- Air gap
  - Double check valve
  - Reduced pressure backflow preventer
  - Vacuum breaker

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### Review Questions

3. For air gaps, the vertical distance from the supply pipe (faucet) to the flood rim must be at least:
- a) Two times the diameter of the supply pipe, but never less than 1 inch.
  - b) Two times the diameter of the supply pipe, but never less than 2 inches.
  - c) Three times the diameter of the supply pipe, but never less than 1 inch.
  - d) Four times the diameter of the supply pipe, but never less than 2 inches.

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### Review Questions

3. For air gaps, the vertical distance from the supply pipe (faucet) to the flood rim must be at least:
- a) Two times the diameter of the supply pipe, but never less than 1 inch.
  - b) Two times the diameter of the supply pipe, but never less than 2 inches.
  - c) Three times the diameter of the supply pipe, but never less than 1 inch.
  - d) Four times the diameter of the supply pipe, but never less than 2 inches.

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### Review Questions

4. Which of the following statements is FALSE?
- a) Proper disposal and storage of garbage is needed to prevent food contamination and avoid pests.
  - b) A trash receptacle must be provided in each area of the establishment where refuse is generated.
  - c) Garbage receptacles must be durable, clean, nonabsorbent, leak-proof, and pest-proof.
  - d) Trash may be stored outdoors in plastic bags provided the bags are stored at least 15 inches off the ground.

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### Review Questions

4. Which of the following statements is FALSE?
- a) Proper disposal and storage of garbage is needed to prevent food contamination and avoid pests.
  - b) A trash receptacle must be provided in each area of the establishment where refuse is generated.
  - c) Garbage receptacles must be durable, clean, nonabsorbent, leak-proof, and pest-proof.
  - d) Trash may be stored outdoors in plastic bags provided the bags are stored at least 15 inches off the ground.

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### Review Questions

5. Which one of the following situations requires corrective action?
- a) A trash can with the lid off while in use
  - b) A handwashing station with a multi-use cloth towel for hand drying
  - c) Light colored ceramic tile being used for the walls of the food preparation area
  - d) Anti-slip flooring provided in the dishwashing area

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### Review Questions

5. Which one of the following situations requires corrective action?
- a) A trash can with the lid off while in use
  - b) A handwashing station with a multi-use cloth towel for hand drying
  - c) Light colored ceramic tile being used for the walls of the food preparation area
  - d) Anti-slip flooring provided in the dishwashing area

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### Review Questions

6. Back siphonage is likely to occur if:
- a) The pressure in the potable water system drops below that of a non-potable or contaminated water source.
  - b) Contamination is forced into a potable water system through a connection that has a higher pressure than the water system.
  - c) Pressure builds up in a sewer line due to blockage.
  - d) The water seal in a kitchen trap is siphoned out.

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### Review Questions

6. Back siphonage is likely to occur if:
- a) The pressure in the potable water system drops below that of a non-potable or contaminated water source.
  - b) Contamination is forced into a potable water system through a connection that has a higher pressure than the water system.
  - c) Pressure builds up in a sewer line due to blockage.
  - d) The water seal in a kitchen trap is siphoned out.

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### Review Questions

7. The primary responsibility of food establishment managers in pest control is to ensure that:
- a) There is good sanitation that will eliminate food, water, and areas for pests to hide.
  - b) Pesticides are applied by licensed operators.
  - c) The pest control operator they use employs integrated pest management.
  - d) The garbage area is kept free of litter.

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### Review Questions

7. The primary responsibility of food establishment managers in pest control is to ensure that:
- a) There is good sanitation that will eliminate food, water, and areas for pests to hide.
  - b) Pesticides are applied by licensed operators.
  - c) The pest control operator they use employs integrated pest management.
  - d) The garbage area is kept free of litter.

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### Review Questions

8. The best way to encourage employees to wash their hands when needed is to:
- a) Provide separate restrooms for employees and for customers.
  - b) Provide handwashing stations near work areas.
  - c) Provide hand sanitizers instead of handwashing lavatories in food preparation areas.
  - d) Put up a sign in the employee locker room reminding them of proper handwashing.

Slide 125

### Review Questions

8. The best way to encourage employees to wash their hands when needed is to:
- a) Provide separate restrooms for employees and for customers.
  - b) Provide handwashing stations near work areas.
  - c) Provide hand sanitizers instead of handwashing lavatories in food preparation areas.
  - d) Put up a sign in the employee locker room reminding them of proper handwashing.

Slide 126

### Review Questions

9. Coving is a (an):
- a) Curved sealed edge between the floor and wall that eliminates sharp corners to make cleaning easier.
  - b) Anti-slip floor covering used to protect workers from slips and falls.
  - c) Plastic material used to seal cracks and crevices under and around equipment in a food establishment.
  - d) Device used to prevent back siphonage.

Slide 127

### Review Questions

9. Coving is a (an):
- a) Curved sealed edge between the floor and wall that eliminates sharp corners to make cleaning easier.
  - b) Anti-slip floor covering used to protect workers from slips and falls.
  - c) Plastic material used to seal cracks and crevices under and around equipment in a food establishment.
  - d) Device used to prevent back siphonage.

Slide 128

### Review of Lesson Performance Standards

Slide 129

### Describe the design characteristics of a safe and sanitary food service facility

Slide 130

### Describe the design characteristics of a safe and sanitary food service facility

- Workflow patterns
- Floors
- Walls and ceilings
- Storage shelves and containers
- Windows and doors
- Plumbing
- Grease traps
- Restrooms
- Waste management
- Ventilation systems
- Lighting

Slide 131

### Identify common pests found in the food service environment.

Slide 132

Identify common pests found in the food service environment.

- Roaches
- Rodents
- Flies
- Moths and Beetles

Slide 133

Characterize the environments most liked by common pests.

Slide 134

Characterize the environments most liked by common pests.

- Roaches: places that are dark, warm, moist, and hard to clean
- Rodents: dark places where food is stored
- Flies: places protected from the wind and edges such as garbage can rims
- Moths and Beetles: foods such as corn, rice, wheat, flour, beans, sugar, meal, and cereal

Slide 135

Demonstrate methods for keeping pests away from food storage areas.

Slide 136

Demonstrate methods for keeping pests away from food storage areas.

- Lock them out!
- Keep it clean!
- Store it right!

Slide 137

Identify common hazards to personal safety in the food service environment.

Slide 138

Identify common hazards to personal safety in the food service environment.

- Exposure to hazardous chemicals
- Bioterrorism

Slide 139

## Food Safety for Child Nutrition Programs

Thank You

Department of Nutrition  
University of California, Davis

Slide 140



## Lesson 5: HACCP – Ensuring Food Safety at Every Step

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## **Lesson Overview**



### **Lesson Competency**

Develop an understanding of ways to monitor and control hazards in the food production process using Hazard Analysis and Critical Control Points (HACCP)

### **Performance Standards**

- Define HACCP and explain its importance in child nutrition programs
- Identify key phases and critical control points in the food preparation process
- Describe methods of controlling food safety hazards during each of the eight phases of the food preparation process: purchasing, receiving, storing, preparing, cooking, serving and holding, cooling, and reheating
- Describe and compare the two most common types of food thermometers; know how to use and calibrate at least one

### **Lesson Content**

#### Hazard Analysis and Critical Control Points

- Description
- Principles of HACCP

#### HACCP Principles

- Conduct a Hazard Analysis
- Determine the Critical Control Points
- Establish Critical Limits
- Establish Monitoring Procedures
- Establish Corrective Action
- Establish Verification Procedures
- Establish Recordkeeping and Documentation Procedures

#### Purchasing

- Choosing suppliers

### Receiving Guidelines

- Identify supplies to keep handy when receiving a delivery
- Inspect the delivery truck
- Inspect delivery for appropriate temperatures, food specifications, and quality

### Receiving:

- Meat
- Poultry
- Eggs
- Milk and dairy products
- Fresh produce
- Frozen food
- Canned food
- Dry food
- Fish
- Shellfish

**More information about requirements for shellfish tags and recordkeeping can be found in Appendix E!**

### Food Thermometers

- Types
- Features necessary
- Calibration methods

#### **Did you know?**

Thermometers need to be calibrated weekly, and every time they are dropped.

### Transporting Food to Satellite Sites

- Use appropriate containers
- Keep hot foods hot, and cold foods cold
- Store food immediately

#### **Did you know?**

Humidity levels in dry storage should be between 50% and 60%.

### Food Storage

- Dry storage
- Refrigeration
- Deep-chilling units
- Freezer

**Don't forget to label your foods with the name of the food and either the use-by date, or the date it was stored!**

### Thawing

- In the refrigerator
- Under cool, clean running water

### Cautions for Cold Food

- Preparing or holding cold food
- Handwashing and glove use
- Separating raw and ready-to-eat foods
- Using acceptable storage times

### Taking Temperatures

- How and where to check the temperature of foods
- How to sanitize and air dry thermometers

**See Appendix F for an easy-to-read table of minimum required cooking temperatures!**

### Holding Hot and Cold Foods

- Keep hot foods hot, and cold foods cold
- Check temperatures
- Discard food held at room temperature for more than four hours

### On the Front Line

- Guidelines for safe service of food

### Sanitary Self-Service

- Guidelines for self-service

### Cooling Hot Foods

- Chilling food quickly
- Utilizing cook-chill equipment

### Reheating Food Safely

- Guidelines for reheating food

### Food Process Flows

- No Cook
- Same Day Service
- Complex

**More detailed information on Complex Food Process Flow can be found in Appendix G!**

## **Vocabulary**

**Aseptic**—Clean, free of harmful microorganisms

**Cold storage units temperature monitoring**—Monitoring cold storage units by placing thermometers in the warmest area (usually by the door) and the coldest area (usually in the back) and sometimes including a read-out panel outside the unit to check the inside temperature without opening the door

**Control point**—A point in the food flow that needs to be controlled so that biological, chemical, or physical contamination does not occur

**Corrective action**—An action taken if a critical limit is not met

**Critical control point**—A point during the food flow where hazards can be prevented, eliminated, or reduced to acceptable levels

**Critical limits**—The boundaries set to make sure that a possible hazard is prevented, eliminated, or reduced to an acceptable level (for example, minimum internal cooking temperatures)

**Hazards**—A danger that is likely to cause illness or injury if not controlled

**Hazard Analysis and Critical Control Points (HACCP)**—A food safety system that focuses on identifying hazards within the flow of food in a food service operation and developing procedures to reduce the risk of foodborne illness and outbreaks

**Monitoring**—Establishing a procedure to determine if the critical limit is being met

**Pasteurization**—A process, used most often with milk, that destroys all disease-causing microorganisms and reduces the total number of bacteria, thus increasing shelf life

**Septic**—Contaminated or infected

**Time temperature indicator (TTI)**—A strip of liquid crystals that changes color when packaged goods reach an unsafe temperature

**UHT milk**—Milk pasteurized using ultra-high temperatures and packaged aseptically; products can be stored safely for several weeks if kept under refrigeration or for short periods with no refrigeration (for example, individual creamers)

**Verification**—The process by which you determine if established critical limits and corrective actions are preventing, eliminating, or reducing hazards to acceptable levels

## **Lesson 5 Worksheet**

*Match the definition to the correct word.*

<b><u>Definition</u></b>		<b><u>Word</u></b>
1. Clean, free of harmful microorganisms	_____	A. Hazard
2. Monitoring cold storage units by placing thermometers in the warmest area (usually by the door) and the coldest area (usually in the back) and sometimes including a read-out panel outside the unit to check the inside temperature without opening the door	_____	B. Control point
3. A point in the food flow that needs to be controlled so that biological, chemical, and physical contamination does not occur	_____	C. Food Process Flow
4. An action taken if a critical limit is not met	_____	D. Aseptic
5. A point during the food flow where hazards can be prevented, eliminated, or reduced to acceptable levels	_____	E. Critical control point
6. The boundaries set to make sure that a possible hazard is prevented, eliminated, or reduced to an acceptable level	_____	F. Corrective Action
7. The path that food follows from receiving through serving	_____	G. Cold Storage units temperature monitoring
8. A danger that is likely to cause illness or injury if not controlled	_____	H. Critical limits

Match the definition to the correct word.

- |   |       |  |
|---|-------|--|
| 9. A food safety system that focuses on identifying hazards within the flow of food in a food service operation and developing procedures to reduce the risk of foodborne illness and outbreaks | _____ | I. Monitoring  |
| 10. Establishing a procedure to determine if the critical limit is being met  | _____ | J. Hazard Analysis and Critical Control Points (HAACP) |
| 11. A process, used most often with milk, that destroys all disease-causing microorganisms and reduces the total number of bacteria, thus increasing shelf life                                 | _____ | K. Time-temperature indicator (TTI)                    |
| 12. Contaminated or infected  | _____ | L. UHT milk  |
| 13. A strip of liquid crystals that changes color when packaged goods reach an unsafe temperature   | _____ | M. Verification  |
| 14. Milk pasteurized using ultra-high temperatures and packaged aseptically   | _____ | N. Pasteurization                                      |
| 15. Determines if established critical limits and corrective actions are preventing, eliminating, or reducing hazards to an acceptable level  | _____ | O. Septic  |

16. What does HACCP stand for?

H \_\_\_\_\_

A \_\_\_\_\_

C \_\_\_\_\_

C \_\_\_\_\_

P \_\_\_\_\_

17. HACCP is a system to help prevent foodborne illness through...

A. Proper \_\_\_\_\_ handling

B. M \_\_\_\_\_

C. Record \_\_\_\_\_

The Seven HACCP Principles:

**1. Conduct a \_\_\_\_\_**

**2. Determine the critical control points**

The most common critical control points are:

A. \_\_\_\_\_

B. \_\_\_\_\_

C. \_\_\_\_\_

D. \_\_\_\_\_

**3. Establish \_\_\_\_\_ limits**

**4. Establish \_\_\_\_\_ procedures**

**5. Establish \_\_\_\_\_ actions**

**6. Establish \_\_\_\_\_ procedures**

**7. Establish \_\_\_\_\_ and \_\_\_\_\_ procedures**

18. The eight steps of the food service process are:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_

19. The two most common food thermometer types are:

- I. \_\_\_\_\_
- II. \_\_\_\_\_

The two calibration methods are:

- I. \_\_\_\_\_
- II. \_\_\_\_\_

**Did you know?**

Thermometers need to be calibrated weekly, and every time they are dropped.

20. The temperature of frozen food should be measured by...

- a) Inserting the sensing probe into the center of a package until the temperature stabilizes.
- b) Inserting the sensing probe between two packages until the temperature stabilizes.
- c) Measuring the ambient temperature of the frozen food compartment of the delivery vehicle.
- d) Looking for signs of freezing and thawing, such as large ice crystals or frozen juices in the box.



21. Frozen foods should not be accepted at a food establishment if...

- a) They have large ice crystals on the surface.
- b) The package is intact.
- c) The temperature is below 32 °F.
- d) The temperature of the delivery truck is 32 °F.

22. Which practice requires corrective action?

- a) Products in the dry storage area are being rotated on a first-in, first-out stock basis.
- b) Foods stored in the walk-in freezer are stored on slatted shelves that are 6 inches above the floor.
- c) Raw beef is stored above salad in the refrigerator.
- d) Pesticides are stored in a locked and labeled cabinet in the dry food storage area.

23. Which of the following is the preferred method for thawing potentially hazardous foods?

- a) In the microwave oven
- b) At room temperature
- c) In the refrigerator
- d) On the counter

24. Hot foods should be held at \_\_\_\_\_ or above and cold foods should be held at \_\_\_\_\_ or below.

- a) 165 °F; 41 °F
- b) 165 °F; 32 °F
- c) 135 °F; 41 °F
- d) 135 °F; 32 °F

25. Poultry and stuffed meats should be cooked to an internal temperature of \_\_\_\_\_ for 15 seconds to be considered safe.

- a) 140 °F
- b) 145 °F
- c) 155 °F
- d) 165 °F

**See Appendix F for an easy to read table of minimum required cooking temperatures!**

26. Ground beef should be cooked to an internal temperature of \_\_\_\_\_ for 15 seconds to be considered safe.

- a) 140 °F
- b) 145 °F
- c) 155 °F
- d) 165 °F

27. Regardless of the type of food, all potentially hazardous foods that have been cooked and cooled need to be reheated to an internal temperature of \_\_\_\_\_ within 2 hours to be considered safe.

- a) 140 °F
- b) 145 °F
- c) 155 °F
- d) 165 °F

**More detailed info on Complex Food Process Flow can be found in Appendix G!**

28. All foods that are to be held cold must be held at \_\_\_\_\_ or below.

- a) 41 °F
- b) 50 °F
- c) 70 °F
- d) 0 °F

29. The Hazard Analysis and Critical Control Points (HACCP) system should be employed...

- a) Whenever potentially hazardous foods are prepared.
- b) Only in institutional foods facilities that provide food for very young or elderly consumers.
- c) Only in convenience stores where mechanical dishwashing equipment is not available.
- d) Only when foods are sold for consumption off site.

30. Which is an example of a critical control point?

- a) Poultry purchased from approved sources.
- b) Chicken and noodles are heated on the stove until the center of the poultry reaches 165 °F for 15 seconds.
- c) Only pasteurized milk is used by the school.
- d) The cutting board is washed and sanitized between chopping carrots and celery for the garden salad.

## Lesson 5 Slides

### Food Safety for Child Nutrition Programs

Department of Nutrition  
University of California, Davis

Slide 1

### Food Safety for Child Nutrition Programs

#### Lesson 5: HACCP - Ensuring Food Safety at Every Step

Slide 2

### Lesson Competency

- Develop an understanding of ways to monitor and control hazards in the food production process using Hazard Analysis of Critical Control Points (HACCP).

Slide 3

### Performance Standards

- Define HACCP and explain its importance in child nutrition programs.
- Identify key phases and critical control points in the food preparation process.

Slide 4

### Performance Standards

- Describe methods of controlling food safety hazards during each of the eight phases of the food preparation process: purchasing, receiving, storing, preparing, cooking, serving and holding, cooling, and reheating.

Slide 5

### Performance Standards

- Describe and compare the two most common food thermometer types, and know how to use and calibrate at least one.

Slide 6

### Vocabulary

- Aseptic: Clean, free of microorganisms
- Cold Storage units temperature monitoring: Monitoring cold storage units by placing thermometers in the warmest area (usually by the door) and the coldest area (usually in the back) and sometimes including a read-out panel outside the unit to check the inside temperature without opening the door.

Slide 7

### Vocabulary

- Control point: A point in the food flow that needs to be controlled so that biological, chemical, and physical contamination does not occur.
- Corrective action: An action taken if a critical limit is not met.

Slide 8

### Vocabulary

- Critical control point: A point during the food flow where hazards can be prevented, eliminated, or reduced to acceptable levels. A critical control point provides a kill step that will destroy bacteria or a control step that prevents or slows down the rate of bacterial growth.

Slide 9

### Vocabulary

- Critical limits: The boundaries set to make sure that a possible hazard is prevented, eliminated, or reduced to an acceptable level (for example, minimum internal cooking temperatures).
- Food Process Flow: the path that food follows from receiving through serving
- Hazard: A foreseeable but unavoidable danger.

Slide 10

### Vocabulary

- Hazard Analysis of Critical Control Points (HAACP): A food safety system that focuses on identifying hazards within the flow of food in a food service operation and developing procedures to reduce the risk of foodborne illness and outbreaks.
- Monitoring: Establishing a procedure to determine if the critical limit is being met.

Slide 11

### Vocabulary

- Pasteurization: A process, used most often with milk, that destroys all disease causing microorganisms and reduces the total number of bacteria, thus increasing shelf life.
- Septic: Contaminated or infected.
- Time-temperature indicator (TTI): A strip of liquid crystals that changes color when packaged goods reach an unsafe temperature.

Slide 12

### Vocabulary

- UHT milk: Milk pasteurized using ultra-high temperatures and packaged aseptically. UHT products can be stored for several weeks if kept under refrigeration. No refrigeration is required for short storage periods. Individual creamers are processed in this manner.
- Verification: The process by which you determine if established critical limits and corrective actions are preventing, eliminating, or reducing hazards to an acceptable level.

Slide 13

### What is HACCP?

Hazard

Analysis

Critical

Control

Points

Slide 14

### What is HACCP?

- A system to help prevent foodborne illness through...
  - Proper food handling
  - Monitoring
  - Recordkeeping
- Purpose: To identify and control potential problems before they happen so that safe food is served.

Slide 15

### Seven HACCP Principles

1. Identify hazards
2. Identify critical control points
3. Establish critical limits
4. Establish monitoring procedures
5. Establish corrective actions
6. Establish verification procedures
7. Establish recordkeeping procedures

Slide 16

### Identify Hazards

- Identify hazards in the food service process
  - Biological
  - Chemical
  - Physical

Slide 17

### Identify Critical Control Points

- A critical control point is a point during the food flow where hazards can be prevented, or reduced to acceptable levels before a food is served.
- It provides a kill step that will destroy bacteria or a control step that prevents or slows down the rate of bacterial growth.

Slide 18

### Identify Critical Control Points

- Most common critical control points
  - Cooking
  - Cooling
  - Reheating
  - Hot/cold holding

Slide 19

### Identify Critical Control Points

- Other critical control points
  - Receiving, thawing, mixing ingredients, etc.
  - Product formulation
  - Purchasing foods from approved source

Slide 20

### Establish Critical Limits

- Critical limits are the boundaries set to make sure that the possible hazard is prevented, eliminated, or reduced to an acceptable level.

Example:  
Ground beef will be cooked to an internal temperature of 155 °F or higher for at least 15 seconds.

Slide 21

### Establish Monitoring Procedures

- Establish who will monitor a critical control point to make sure that a critical limit is met
- Establish when and how this person will monitor the critical control point

Slide 22

### Establish Corrective Actions

- Establish what actions a monitor should take if a critical control limit is not met

Slide 23

### Establish Verification Procedures

- Make sure the HACCP plan is working
- Make sure the critical limits and corrective actions are preventing, eliminating, or reducing hazards to an acceptable level

Slide 24

### Establish Recordkeeping Procedures

- Decide what records need to be kept to...
  - document the HACCP plan
  - determine if it is working

Slide 25

### Food Service Process

- Step 1: Purchasing
- Step 2: Receiving
- Step 3: Storing
- Step 4: Preparing

Slide 26

### Food Service Process

- Step 5: Cooking
- Step 6: Serving and Holding
- Step 7: Cooling
- Step 8: Reheating

Slide 27

### Purchasing Safely

It is your job to choose vendors wisely!

Slide 28

### Purchasing

Suppliers should...

- Meet health standards
- Use HACCP in their operations
- Train employees in sanitation
- Use clean delivery trucks with adequate refrigeration and freezer units

Slide 29

### Purchasing

Suppliers should...

- Deliver foods at correct temperatures
- Deliver raw products separately from processed foods and produce

Slide 30

## Purchasing

Suppliers should...

- Use protective, leak-proof, durable packaging
- Upon request, provide policies and procedures on handling recalls and returns

Slide 31

## Purchasing

You should:

- Let vendors know expectations.
- Put food safety standards in purchase specifications.
- Check vendor's health inspection report.
- Ask vendors for a printed copy of their standardized procedure for food sanitation.
- Work with vendors to establish a schedule.

Slide 32

## Purchasing

You should:

- Tell vendors you will be inspecting their trucks at every delivery and then do so.
- If possible, visit vendors' warehouses to make sure they are clean and organized.
- Reject all products that do not meet your requirements.

Slide 33

## Activity: Safe In, Safe Out

A case study:

- The delivery truck has just arrived with a variety of foods- some are frozen foods, some are produce, and some are dry foods. It is almost serving time, so Mary is in a rush to receive and store the foods. At the same time, the dairy's delivery person arrives with the milk.

Slide 34

## Activity: Safe In, Safe Out

- As Mary quickly signs for the shipment, she notices that dirt from the milk cases has gotten into the milk cartons. She thinks about rejecting the milk, but realizes this would leave her without milk to serve to the students as part of the reimbursable meal.

Slide 35

## Activity: Safe In, Safe Out

- So Mary accepts the milk and gives a stern warning to the delivery person. She stores the rest of the foods in the appropriate storage areas and washes each milk carton in cold water to remove the soil before storage.

Slide 36



### Activity: Safe In, Safe Out

- What did Mary do right?
  - Notices dirt on milk cartons
  - Stores other food appropriately
- What did Mary do wrong?
  - Accepted the dirty milk cartons
  - Did not keep a day's supply of milk in storage
  - Did not schedule deliveries for a more convenient time

Slide 37

### Receiving Guidelines

- Have a calibrated food thermometer in the receiving area to check delivery temperatures.
- Have a pen and paper available.
- Keep sanitary carts handy.
- Plan ahead to make sure you have enough space.

Slide 38

### Receiving Guidelines

- Have the receiving ticket or market order ready.
- Have the product specification list ready.
- Keep receiving areas well lit and clean.
- Keep all flooring clean.

Slide 39

### Receiving Guidelines

- Make sure the truck looks and smells clean.
- Check the interior temperature to make sure it is appropriate for the foods delivered.

Slide 40

### Receiving Guidelines

- Inspect for appropriate temperatures, food specifications, and food quality.
- Mark "use by" dates.
- Check expiration dates of perishables.
- Make sure shelf-life dates have not expired.

Slide 41

### Receiving Guidelines

- Make sure frozen foods are in airtight, moisture-proof wrappings.
- Reject thawed and refrozen food.
- Reject cans if swollen, rusty, dented, or with flawed seams.
- Check food temperatures.

Slide 42

### Receiving Guidelines

- Look for content or pest damage.
- Reject foods from dirty flats or crates.
- Remove empty containers and packing materials immediately.
- Move foods quickly from receiving area to appropriate storage.

Slide 43

### Receiving Meat

- USDA inspected (grading is voluntary)
- Firm and elastic to the touch
  - Not slimy, sticky, or dry
- 41 °F or below at delivery
- No signs of spoilage
  - Brown, green, purple blotches
  - Black, white, or green spots

Slide 44

### Receiving Poultry

- Grade A
- 41 °F or below and surrounded by crushed ice at delivery
- No signs of spoilage
  - Greenish or purplish discoloration
  - Abnormal odor
  - Stickiness under wings/around joints
  - Dark wing tips

Slide 45

### Receiving Eggs

- Grade A or AA, USDA inspected
- Clean shells
- Fresh
- At 45 °F or below when delivered
- Free of cracks or chips

Slide 46

### Receiving Milk

- Pasteurized, Grade A milk
- Sweet taste and smell
- At 41 °F or below and delivered refrigerated
- No sour, moldy taste and/or odor

Slide 47

### Receiving Dairy Products

- Pasteurization:
  - Destroys all disease-causing microorganisms in the milk
  - Reduces the total number of bacteria, thus increasing the shelf life

Slide 48

### Receiving Dairy Products

- “UHT”:
  - Pasteurization using Ultra High Temperatures
  - Milk marked “UHT” is also placed in aseptic packaging
  - No refrigeration required for short storage periods
  - Example: individual creamers

Slide 49

### Receiving Dairy Products

- Cheese
  - Received at 41 °F and delivered refrigerated
  - Proper color and moisture
  - Reject if contains mold (not a normal part of the cheese)

Slide 50

### Receiving Dairy Products

- Butter
  - Received at 41 °F and delivered refrigerated
  - Firm texture, even color, and free of mold
  - Package intact

Slide 51

### Receiving Dairy Products

Cheese and butter must be kept out of the temperature danger zone!

Slide 52

### Receiving Fresh Produce

- Fresh taste
- Little or no dirt
- Firm texture
- Reasonably unblemished
- No evidence of mold
- No signs of insect infestation

Slide 53

### Receiving Fruits and Vegetables

- Purchase raw fruits and vegetables from approved sources and wash them thoroughly to remove soil and other contaminants before they are...
  - cut
  - combined with other ingredients
  - cooked
  - served
  - offered for human consumption in a ready-to eat form

Slide 54

### Receiving Frozen Food

- Packaging intact
- 0 °F or below
- For ice cream, 6 °F to 10 °F is permissible
- No signs of thawing and refreezing

Slide 55

### Receiving Canned Food

- Packaging intact
- No swollen, leaking, rusty, or dented cans
- No flawed seals
- No abnormal odor, color, or texture
- No foamy or milky colored liquid not natural to the product

Slide 56

### Receiving Dry Food

- Packaging intact
- Dry and undamaged
- No damp or moldy containers
- No signs of insect infestation

Slide 57

### Receiving Fish

#### Finfish (Catfish, Trout)

- Mild, pleasant odor
- Bright, shiny skin with scales tightly attached
- 41 °F or below
- Not slimy, sticky, or dry

Slide 58

### Receiving Shellfish

#### Shellfish

- 45 °F or below
- Free of mud
- No dead shellfish or shellfish with open or broken shells
- No strong, fishy odor
- Not slimy, sticky, or dry

Slide 59

**More information about requirements for shellfish tags and recordkeeping can be found in Appendix E!**

### Food Thermometers

#### Thermometer features

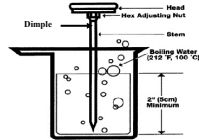
- Metal-stemmed, numerically scaled
- Able to measure internal temperatures, from 0 °F to 220 °F
- Accurate to  $\pm 2$  °F
- Sanitized and air-dried before and after each use

Slide 60

## Food Thermometers

### Types of Thermometers

- Bi-metallic stemmed thermometers
- Thermocouples



<http://www.fsis.usda.gov>

Slide 61

## Food Thermometers

### Types of Thermometers

- Digital Thermometers
- Time-temperature indicators (TTIs)
- Others (meat, deep-fry, candy)

Slide 62

## Calibration Methods

- Ice-Point Method

Slide 63

## Calibration Methods

- Boiling-Point Method

Slide 64

### Did you know?

Thermometers need to be calibrated weekly, and every time they are dropped.

## Checking Temperatures of Specially Packaged Foods

The following require special procedures:

- Eggs
- Milk

Slide 65

## Checking Temperatures of Specially Packaged Foods

The following require special procedures:

- Modified Atmosphere Packaged (MAP) Foods
- Frozen Entrees

Slide 66

### Transporting Food to Satellite Sites

- Use carriers approved by the National Sanitation Foundation (NSF) International.
- Sanitize carriers daily.
- Check that insulating properties work.
- Be sure trucks can keep hot foods hot (at 135 °F or above) and cold foods cold (41 °F or below).

Slide 67

### Satellite Sites

- Use appropriate containers.
  - Rigid and sectioned
  - Tightly closed
  - Nonporous
  - Easy to clean or disposable
  - Approved to hold food

Slide 68

### Satellite Sites

- Transport an extra sample of hot and cold food to...
  - test food temperatures on arrival and
  - keep a 48-hour sample of potentially hazardous food.
- Be ready to store food immediately

Slide 69

### Food Storage

- Dry Storage
  - Keep storage area clean and dry
  - Hold dry foods between 50 °F – 70 °F

Slide 70

#### Did you know?

Humidity levels in dry storage should be between 50% and 60%.

### Food Storage

- Dry Storage
  - Use the “First in, First out” rotation method
  - 6 inches above ground

Slide 71

### Food Storage

- Refrigeration
  - Be sure cold air can circulate
  - Label all food properly

Slide 72

**Don't forget to label your foods with the name of the food and either the use-by date, or the date it was stored!**

## Food Storage

- Refrigeration
  - Keep refrigerator 39 °F or below
  - Cool hot foods before refrigerating them

Slide 73

## Food Storage

- Deep-Chilling Units
  - Make sure temperature remains between 26 °F and 32 °F
  - Keep foods in proper containers

Slide 74

## Food Storage

- Freezer
  - Always remember FIFO!
  - Leave space between the items to provide for air circulation

Slide 75

## Food Storage

- Freezer
  - 0 °F
  - Avoid placing large amounts of hot foods in the freezer

Slide 76

## Thawing

### Thawing Methods:

- In refrigerator on lowest shelf
- Under cool, clean running water
- From the frozen state

Remember: Keep food out of the temperature danger zone.

Slide 77

## Marinating

- Marinate meat, fish, and poultry in the refrigerator.
- Never marinate at room temperature.
- Never save and reuse marinade.
- Wash and sanitize equipment used to marinate potentially hazardous foods.

Slide 78

### Cautions for Cold Food

- Chill ingredients and combine them while chilled.
- Prepare food close to serving time.
- Prepare food in small batches and place in cold storage immediately.
- Hold prepared food at 41 °F or below.

Slide 79

### Cautions for Cold Food

- Wash fresh produce with plain, drinkable water.
- Use brush to scrub thick-skinned produce such as melons.

Slide 80

### Cautions for Cold Food

- Wash hands properly and use single-use gloves.
- Separate raw from ready-to-serve food.

Slide 81

### Cautions for Cold Food

- Sanitize cutting boards, knives, etc. after contact with potentially hazardous foods.
- Discard leftover marinade and batter.

Slide 82

### FDA Food Code Says...

- The acceptable storage time for deli meats, potato and macaroni salads, chicken and seafood salads, cooked shrimp and similar items is...
  - seven (7) calendar days when held at 41 °F or below, and
  - four (4) calendar days when held at 45 °F or below.

Slide 83

### Central Kitchen Chicken

A case study (Part 1):

On Wednesday...

- Marge works for the central kitchen in a large school district. She is preparing chicken salad to be delivered to the other schools for tomorrow's lunch.
- Marge puts the frozen chicken in a pot of boiling water and stews it until done.

Slide 84



### Central Kitchen Chicken

- Although she has a bad cough- and is coughing continuously- there is no one else available to help her, so she debones the chicken herself when it is cool enough to handle.

Slide 85

### Central Kitchen Chicken

Where did Marge go wrong?

Slide 86

### Central Kitchen Chicken

Where did Marge go wrong?

- Boiling frozen chicken is not a proper thawing and cooking technique.
- Marge should not have worked with her cough, due to the risk of spreading *Staphylococcus* organisms.

Slide 87

### Central Kitchen Chicken

A case study (Part 2):

A little later on Wednesday...

- After deboning, Marge cools the chicken further at room temperature. She chops it into pieces and puts the pieces into 12-inch deep pans. To cool the chicken overnight, she puts the pans in the walk-in refrigerator. She is careful to check the refrigerator thermometer, and sees that it reads 45 °F.

Slide 88

### Central Kitchen Chicken

Where did Marge go wrong?

Slide 89

### Central Kitchen Chicken

Where did Marge go wrong?

- Chicken should be put into shallow pans, covered, and refrigerated.
- The refrigerator temperature was not cold enough; it should be 41 °F or below.
- Marge did not use a thermometer to check the internal temperature of the chicken itself; it should be 41 °F or below.

Slide 90

## Central Kitchen Chicken

A case study (Part 3):

On Thursday...

- Marge adds the remaining ingredients to the chicken salad. The salad is packed in thermal containers and delivered to the schools between 9:00 am and 10:30 am. The containers go to the warm classrooms, where they are held until lunchtime (around noon).

Slide 91

## Central Kitchen Chicken

Was the salad completed and delivered safely?

Slide 92

## Central Kitchen Chicken

Was the salad completed and delivered safely?

- No, because the chicken was never going to get cooler than the temperature it was when placed into the thermal containers.
- No because Marge's cough may have infected the food with *Staphylococcus* bacteria, which would multiply rapidly under these conditions.

Slide 93

## Tips for Cooking Safely

- Cook food to proper internal temperature.
- Frequently stir foods cooked in deep pots.
- Make size and thickness of each portion as uniform as possible.
- Allow cooking equipment to return to proper temperatures between batches.

Slide 94

## Tips for Cooking Safely

- Never interrupt the cooking process.
- Monitor accuracy of heating equipment with each use.
- Always use calibrated, sanitized thermometers to take internal temperatures of food.

Slide 95

## Taking Temperatures

- Use a metal-stemmed, numerically scaled thermometer accurate to  $\pm 2^\circ\text{F}$ .
- Sanitize and air dry the thermometer before and after each use.
- Check food temperature in several places, especially the thickest part.
- Do not let the thermometer touch the pan, bone, fat, or gristle.

Slide 96

## Taking Temperatures

- Roasts: Insert tip midway
- Chops and Steaks: Insert tip into thickest part
- Hamburgers and thin food: Insert thermometer into the side
- Poultry: Insert tip into thickest part of the thigh, avoiding bone
- Poultry parts: Insert tip into thickest area

Slide 97

## Taking Temperatures

- Combination dishes: Insert thermometer into thickest part of the food or center of the dish; check egg dishes and dishes with ground meat and poultry in several places.
- Wait 15 seconds for the reading to stabilize, then record the temperature.

Be careful to avoid recontamination!

Slide 98

Food*	Minimum Temperature	Time Required
Ground beef and other ground meats (except for poultry)	155 °F (68 °C)	15 seconds
Poultry	165 °F (74 °C)	15 seconds
Stuffing, stuffed meats (including stuffed fish), stuffed pasta, casseroles, raw/cooked dishes	165 °F (74 °C)	15 seconds
Beef and pork roasts and ham Roast beef (rare)	145 °F (63 °C) 130 °F (54 °C) or 140 °F (60 °C)	4 minutes 112 minutes 12 minutes
Pork (other than roasts and ground pork)	145 °F (63 °C)	15 seconds
Beef steaks, veal, lamb, commercially raised game	145 °F (63 °C)	15 seconds
Fish, foods containing fish	145 °F (63 °C)	15 seconds
Shell eggs (for later service)	155 °F (68 °C) Hold at 140 °F (60 °C)	15 seconds until service
Vegetables	Must be held at 135 °F (60 °C)	Until service
Microwaved foods (cover food, rotate, or stir halfway through the cooking process, take temperature in several places to verify temperature, let stand covered for two minutes after cooking)	165 °F (74 °C) temperature reached throughout food	Hold, covered, for two minutes after removing from microwave

\*California Retail Food Code

**Having trouble reading this table?  
See Appendix F for a larger version!**

## Holding Hot and Cold Foods

- Keep food HOT and keep cold food COLD.
- Only use hot holding equipment during service.
- Stir food periodically.
- Check temperatures and keep records.

Slide 100

## Holding Hot and Cold Foods

- Cover hot holding equipment and prevent contamination; monitor its temperature.
- Discard any food held at room temperature for more than four hours.
- Never add fresh food to food already being served.

Slide 101

## A One-Server Show

A case study:

- Veronica prepares, serves, and is cashier for breakfast in a small elementary school.
- Students go through the line and basically serve themselves. This morning, the ham biscuits were on the baking pan brought to the serving line. They were not pre-wrapped.

Slide 102

### A One-Server Show

- Veronica had finished cashiering and was counting money when some students arriving on a late bus came for their breakfast. Trying to help the students hurry, Veronica put the ham biscuits on their trays for them.

Slide 103

### A One-Server Show

Where did Veronica go wrong?

Slide 104

### A One-Server Show

Where did Veronica go wrong?

- Veronica should have pre-wrapped the ham biscuits to avoid contamination by students coming through the line.
- She contaminated the biscuits when she touched them by not washing her hands and putting on serving gloves after touching the money.

Slide 105

### On the Front Line

- Always wash hands before serving.
- Use clean, sanitized ladles and spoons.
- Never touch parts of plates, tableware, or glasses/cups where a food or a customer's mouth touch.
- Wear gloves to serve food by hand.

Slide 106

### On the Front Line

- Cover cuts or infections with bandages.
- Discard gloves if they touch any unsanitary surface.
- Use tongs to serve rolls, or wear gloves.
- Clean and sanitize equipment and utensils after each use.

Slide 107

### On the Front Line

- Use lids and sneeze guards.
- Wash hands and tools between contact with raw and prepared foods.
- Throw away garnishes.
- Maintain water for storage of in-use utensils at 135 °F.

Slide 108

## Sanitary Self-Service

Child Nutrition Professionals can:

- Observe customer behavior and remove food that may have been contaminated.

Slide 109

## Sanitary Self-Service

Customers may contaminate food by:

- Using the same plate twice
- Not using the serving utensils
- Touching food with their hands
- Touching the edges of serving dishes
- Sneezing or coughing on food

Slide 110

## Sanitary Self-Service

Customers may contaminate food by:

- Picking up foods with their fingers
- Eating on the food line
- Dipping fingers in food to taste it
- Returning food items to avoid waste
- Putting their heads under sneeze guards

Slide 111

## Just when you thought you were safe...

Myth:

- After food is served, we can relax about ensuring its safety.

Facts:

- Improper cooling is the number one cause of foodborne illness.
- Child nutrition programs often prepare foods in advance or use leftover food.

Slide 112

## Just when you thought you were safe...

What to do:

- Take two key precautions when cooling food:
  - Cool food rapidly
  - Protect food from contamination

Slide 113

## Cooling Hot Foods

- Rapid reduction of temperature

Slide 114

## Chilling Food Quickly

### Goal:

- Chill potentially hazardous food as rapidly as possible to reduce time in the “temperature danger zone.”

Slide 115

## Chilling Food Quickly

### To chill food quickly:

1. Divide into small portions.
2. Chill.
3. Stir frequently.

Slide 116

## Chilling Food Quickly

### To chill food quickly:

4. Measure temperature periodically.
5. Tightly cover and label cooled food with preparation date and time.

Slide 117

## Cook-Chill Equipment

- Cook-chill equipment rapidly cools and then reheats foods.
  - Blast chillers
  - Tumbler chillers

Slide 118

## Reheating Food Safely

- Boil sauces, soups, and gravies; heat other food to no less than 165 °F within 2 hours.
- Never reheat food in hot holding equipment.
- Never mix leftovers with fresh food.

Slide 119

## Reheating Food Safely

- Never reheat food more than once.
- Keep refrigerated leftovers no longer than 7 days if held at 41°F or below and 4 days if held at 45 °F or below.

Slide 120

### Food Process HACCP

- To evaluate current operating procedures:
  - Identify the flow of food
  - Identify potentially hazardous foods
  - Develop a flow diagram

Slide 121

### Food Process HACCP

- The USDA requires all districts to have a HACCP plan
- The California Department of Education offers a HACCP course. For more information call 1-800-952-5609.

Slide 122

### The Three Food Process Flows

- 1) No Cook: tuna salad and cold meat sandwiches
- 2) Same Day Service: hamburgers, hot vegetables, and cooked eggs
- 3) Complex: taco filling, chili, large roasts, soups, gravies, or sauces

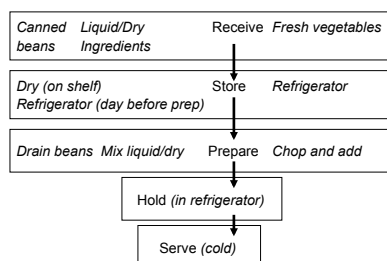
Slide 123

### No Cook Food Process Flow

- Avoids a cooking step
- No step to eliminate bacteria, parasites, or viruses
- Be sure to:
  - Obtain food from approved sources
  - Maintain cold temperatures
  - Avoid cross-contamination

Slide 124

### No Cook Food Process Flow



Slide 125

### Same Day Food Process Flow

- Generally passes through the temperature danger zone only once
- The preparation step is complex

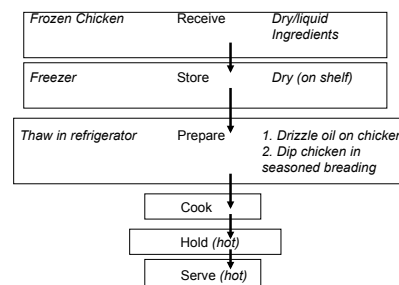
Slide 126

### Same Day Food Process Flow

- The following are important:
  - Time and temperature controls
  - Good sanitation

Slide 127

### Same Day Service Food Process Flow



Slide 128

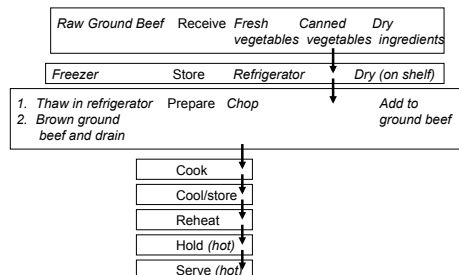
### Complex Food Process Flow

- Food is prepared and cooked a day before service
- Food passes through the temperature danger zone several times
- Failing to properly control the temperature can lead to foodborne illness

Slide 129

**More detailed info on Complex Food Process Flow can be found in Appendix G!**

### Complex Food Process Flow



Slide 130

### Review Questions

1. The temperature of frozen food should be measured by...
  - a) Inserting the sensing probe into the center of a package until the temperature stabilizes.
  - b) Inserting the sensing probe between two packages until the temperature stabilizes.
  - c) Measuring the ambient temperature of the frozen food compartment of the delivery vehicle.
  - d) Looking for signs of freezing and thawing, such as large ice crystals or frozen juices in the box.

Slide 131

### Review Questions

1. The temperature of frozen food should be measured by...
  - a) Inserting the sensing probe into the center of a package until the temperature stabilizes.
  - b) Inserting the sensing probe between two packages until the temperature stabilizes.
  - c) Measuring the ambient temperature of the frozen food compartment of the delivery vehicle.
  - d) Looking for signs of freezing and thawing, such as large ice crystals or frozen juices in the box.

Slide 132



### Review Questions

2. Frozen foods should not be accepted at a food establishment if...

- a) They have large ice crystals on the surface.
- b) The package is intact.
- c) The temperature is below 32 °F.
- d) The temperature of the delivery truck is 32 °F.

Slide 133

### Review Questions

2. Frozen foods should not be accepted at a food establishment if...

- a) They have large ice crystals on the surface.
- b) The package is intact.
- c) The temperature is below 32 °F.
- d) The temperature of the delivery truck is 32 °F.

Slide 134

### Review Questions

3. Which practice requires corrective action?

- a) Products in the dry storage area are being rotated on a first-in, first-out stock basis.
- b) Foods stored in the walk-in freezer are stored on slatted shelves that are 6 inches above the floor.
- c) Raw beef is stored above salad in the refrigerator.
- d) Pesticides are stored in a locked and labeled cabinet in the dry food storage area.

Slide 135

### Review Questions

3. Which practice requires corrective action?

- a) Products in the dry storage area are being rotated on a first-in, first-out stock basis.
- b) Foods stored in the walk-in freezer are stored on slatted shelves that are 6 inches above the floor.
- c) Raw beef is stored above salad in the refrigerator.
- d) Pesticides are stored in a locked and labeled cabinet in the dry food storage area.

Slide 136

### Review Questions

4. Which of the following is the preferred method for thawing potentially hazardous foods?

- a) In the microwave oven
- b) At room temperature
- c) In the refrigerator
- d) On the counter

Slide 137

### Review Questions

4. Which of the following is the preferred method for thawing potentially hazardous foods?

- a) In the microwave oven
- b) At room temperature
- c) In the refrigerator
- d) On the counter

Slide 138

## Review Questions

5. Hot foods should be held at \_\_\_\_\_ or above and cold foods should be held at \_\_\_\_\_ or below.

- a) 165 °F; 41 °F
- b) 165 °F; 32 °F
- c) 135 °F; 41 °F
- d) 135 °F; 32 °F

Slide 139

## Review Questions

5. Hot foods should be held at \_\_\_\_\_ or above and cold foods should be held at \_\_\_\_\_ or below.

- a) 165 °F; 41 °F
- b) 165 °F; 32 °F
- c) 135 °F; 41 °F
- d) 135 °F; 32 °F

Slide 140

## Review Questions

6. Poultry and stuffed meats should be cooked to an internal temperature of \_\_\_\_\_ for 15 seconds to be considered safe.

- a) 140 °F
- b) 145 °F
- c) 155 °F
- d) 165 °F

Slide 141

## Review Questions

6. Poultry and stuffed meats should be cooked to an internal temperature of \_\_\_\_\_ for 15 seconds to be considered safe.

- a) 140 °F
- b) 145 °F
- c) 155 °F
- d) 165 °F

Slide 142

## Review Questions

7. Ground beef should be cooked to an internal temperature of \_\_\_\_\_ for 15 seconds to be considered safe.

- a) 140 °F
- b) 145 °F
- c) 155 °F
- d) 165 °F

Slide 143

## Review Questions

7. Ground beef should be cooked to an internal temperature of \_\_\_\_\_ for 15 seconds to be considered safe.

- a) 140 °F
- b) 145 °F
- c) 155 °F
- d) 165 °F

Slide 144

### Review Questions

8. Regardless of the type of food, all potentially hazardous foods that have been cooked and cooled need to be reheated to an internal temperature of \_\_\_\_\_ within 2 hours to be considered safe.

- a) 140 °F
- b) 145 °F
- c) 155 °F
- d) 165 °F

Slide 145

### Review Questions

8. Regardless of the type of food, all potentially hazardous foods that have been cooked and cooled need to be reheated to an internal temperature of \_\_\_\_\_ within 2 hours to be considered safe.

- a) 140 °F
- b) 145 °F
- c) 155 °F
- d) 165 °F

Slide 146

### Review Questions

9. All foods that are to be held cold must be held at \_\_\_\_\_ or below.

- a) 41 °F
- b) 50 °F
- c) 70 °F
- d) 0 °F

Slide 147

### Review Questions

9. All foods that are to be held cold must be held at \_\_\_\_\_ or below.

- a) 41 °F
- b) 50 °F
- c) 70 °F
- d) 0 °F

Slide 148

### Review Questions

10. The Hazard Analysis Critical Control Point (HACCP) system should be employed...
- a) Whenever potentially hazardous foods are prepared.
  - b) Only in institutional foods facilities that provide food for very young or elderly consumers.
  - c) Only in convenience stores where mechanical dishwashing equipment is not available.
  - d) Only when foods are sold for consumption off site.

Slide 149

### Review Questions

10. The Hazard Analysis Critical Control Point (HACCP) system should be employed...
- a) Whenever potentially hazardous foods are prepared.
  - b) Only in institutional foods facilities that provide food for very young or elderly consumers.
  - c) Only in convenience stores where mechanical dishwashing equipment is not available.
  - d) Only when foods are sold for consumption off site.

Slide 150

### Review Questions

11. Which is an example of a critical control point?
- a) Poultry purchased from approved sources.
  - b) Chicken and noodles are heated on the stove until the center of the poultry reaches 165 °F for 15 seconds.
  - c) Only pasteurized milk is used by the school.
  - d) The cutting board is washed and sanitized between chopping carrots and celery for the garden salad.

Slide 151

### Review Questions

11. Which is an example of a critical control point?
- a) Poultry purchased from approved sources.
  - b) Chicken and noodles are heated on the stove until the center of the poultry reaches 165 °F for 15 seconds.
  - c) Only pasteurized milk is used by the school.
  - d) The cutting board is washed and sanitized between chopping carrots and celery for the garden salad.

Slide 152

### Review of Lesson Performance Standards

Slide 153

### Define HACCP and explain its importance in child nutrition programs

Slide 154

### Define HACCP and explain its importance in child nutrition programs

- HACCP means Hazard Analysis of Critical Control Points.
- It is important because it is a preventive system to eliminate hazards from food before it is served to consumers.
- Safe food is important in child nutrition programs because children are “at risk” for foodborne illness.

Slide 155

### Identify key phases and critical control points in the food preparation process

Slide 156

### Identify key phases and critical control points in the food preparation process

- The key phases in the food preparation process are: purchasing, receiving, storing, preparing, cooking, serving and holding, cooling, and reheating.
- The most common critical control points are cooking, cooling, reheating, and hot/cold holding.

Slide 157

### Describe methods of controlling food safety hazards during each of the eight phases in the food preparation process

Slide 158

### Describe methods of controlling food safety hazards during each of the eight phases in the food preparation process

- Purchasing
- Receiving
- Storing
- Preparing
- Cooking
- Serving and holding
- Cooling
- Reheating

Slide 159

### Describe and compare the two most common food thermometer types, and know how to use and calibrate at least one

Slide 160

### Describe and compare the two most common food thermometer types, and know how to use and calibrate at least one

- The two most common types are...
  - Bi-metallic stemmed thermometers
  - Digital thermometers
- There are two calibration methods...
  - Ice-Point Method
  - Boiling-Point Method

Slide 161

## Congratulations!

You have completed the Food Safety for Child Nutrition Programs online course.

Slide 162

## Food Safety for Child Nutrition Programs

Thank You

Department of Nutrition  
University of California, Davis

Slide 163

## Acknowledgements

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Slide 164

# Supplemental Lesson: Food Allergies and Food Intolerances

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## **Lesson Overview**



### **Note about the Supplemental Lesson: Food Allergies and Food Intolerances**

This lesson is currently not available as an online course lesson.

### **Lesson Competency**

Develop an understanding of the causes and symptoms of food allergies and intolerances, and the responsibilities of food service establishments in preventing life-threatening reactions

### **Performance Standards**

- Describe the differences between food allergies and food intolerances
- Identify the eight most common food allergens
- Identify school nutrition program responsibilities and requirements for accommodating children with food allergies or intolerances
- Demonstrate methods for managing food allergies

### **Lesson Content**

#### **Food Allergies**

- Description
- Symptoms
- Anaphylaxis
- Most common food allergies

#### **Food Intolerance**

- Description
- Celiac disease
- Lactose intolerance

#### **Federal Requirements for National School Lunch and School Breakfast Programs**

- Medical Statement to Request Special Meals and/or Accommodations
- Recognized medical authorities
- Accommodations for children with food allergies or intolerances

### Food Allergy Management Plan

- Questions to consider when developing a food allergy management plan
- Guidelines for management of food allergies in the kitchen and cafeteria

### Cross Contact

- Description
- Prevention

### Food Allergy HACCP

- Adapting HACCP principles for food allergies

## **Vocabulary**

**Food allergy**—A specific type of immune system response to a food

**Allergen**—A substance that causes an allergic reaction

**Antibodies**—A protein in the body that reacts and attaches to specific substances

**Antigen**—A protein or other substance that antibodies attach to

**Mast cells**—A type of immune system cell found in body tissues

**Basophils**—A type of immune system cell found in blood

**Immunoglobulin E (IgE)**—A type of antibody found on basophils and mast cells

**Anaphylaxis**—A severe allergic reaction that results in a drop in blood pressure and difficulty breathing

**Food intolerance**—A sensitivity to a food that does not involve IgE

**Celiac disease**—An immune system reaction to gluten that causes damage to the lining of the intestine

**Lactose intolerance**—Inability to digest lactose

**Medical Statement to Request Special Meals and/or Accommodations**—Required form when meal accommodations are made to ensure they are reimbursable

**Cross contact**—When allergens from a food are transferred to another food



## **Supplemental Lesson Worksheet**

Match the definition to the correct word.

<b><u>Definition</u></b>	<b><u>Word</u></b>
1. A specific type of immune system response to a food _____	A. Immunoglobulin E (IgE)
2. A substance that causes an allergic reaction _____	B. Celiac disease
3. A protein in the body that reacts and attaches to specific substances _____	C. Food allergy
4. A protein or other substance that antibodies attach to _____	D. Anaphylaxis
5. A type of immune system cell found in body tissues _____	E. Basophils
6. A type of immune system cell found in blood _____	F. Antibodies
7. A type of antibody found on basophils and mast cells _____	G. Cross-contact
8. A severe allergic reaction that results in a drop in blood pressure and difficulty breathing _____	H. Medical Statement to Request Special Meals and/or Accommodations
9. A sensitivity to a food that does not involve IgE _____	I. Allergen
10. A immune system reaction to gluten that causes damage to the lining of the intestine _____	J. Lactose intolerance
11. Inability to digest lactose _____	K. Antigen
12. Required form when meal accommodations are made to insure they are reimbursable _____	L. Food intolerance
13. When allergens from a food are transferred to another food _____	M. Mast cells

14. \_\_\_\_\_ is the most dangerous food allergy reaction, because it can result in death if not treated quickly.

15. The eight most common food allergies are:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_
- 4) \_\_\_\_\_
- 5) \_\_\_\_\_
- 6) \_\_\_\_\_
- 7) \_\_\_\_\_
- 8) \_\_\_\_\_

16. Those with celiac disease need to avoid:

- i. \_\_\_\_\_
- ii. \_\_\_\_\_
- iii. \_\_\_\_\_
- iv. \_\_\_\_\_

17. Developing a Food Allergy Management Plan:

- Have a written \_\_\_\_\_ for how you will handle food allergies
- Know what to \_\_\_\_\_ and substitute
- Read \_\_\_\_\_
- \_\_\_\_\_ the kitchen and cafeteria
- Identify the \_\_\_\_\_
- Develop \_\_\_\_\_ procedures

18. Which of the following is one of the most common food allergies?
- a) Gluten
  - b) Strawberries
  - c) Wheat
  - d) MSG
19. Food allergies are mediated by which of the following?
- a) Immunoglobulin E (IgE)
  - b) Immunoglobulin G (IgG)
  - c) Histamine
  - d) Epinephrine
20. Which of the following is NOT a symptom of a food allergy?
- a) Itchiness in the mouth
  - b) Rash or hives
  - c) Runny nose
  - d) Fever
21. Which of the following statements about anaphylaxis is true?
- a) It is a symptom of celiac disease.
  - b) It is only caused by peanut allergies.
  - c) It can result in death if not treated.
  - d) It is treated with antihistamines.
22. People with celiac disease need to avoid which of the following?
- a) Wheat, Rice, Oats, and Barley
  - b) Wheat, Rye, Oats, and Barley
  - c) Rye, Rice, Oats, and Lactose
  - d) Wheat, Lactose, Casein, and Whey
23. Which of the following can sign a Medical Statement to Request Special Meals and/or Accommodations?
- a) Registered nurse
  - b) Registered dietitian
  - c) Licensed pharmacist
  - d) Licensed physician

24. Which of the following is TRUE about accommodating food allergies and intolerances?
- a) Agencies are required to make accommodations for all allergies and intolerances.
  - b) Accommodations for food intolerances do not require a signed medical statement.
  - c) A food allergy that results in a severe, life-threatening reaction is considered a disability.
  - d) A note on a physician's letterhead can substitute for a signed medical statement.
25. What is it called when a food that does not contain an allergen comes into contact with a food that does?
- a) Cross contact
  - b) Cross-contamination
  - c) Hidden allergen
  - d) Control point



## Supplemental Lesson Slides

### Food Safety for Child Nutrition Programs

Department of Nutrition  
University of California, Davis

Slide 1

### Food Safety for Child Nutrition Programs

#### Supplemental Lesson: Food Allergies and Food Intolerances

Slide 2

### Lesson Competency

- Develop an understanding of the causes and symptoms of food allergies and intolerances, and the responsibilities of food service establishments in preventing life-threatening reactions.

Slide 3

### Performance Standards

- Describe the differences between food allergies and intolerances.
- Identify the eight most common food allergens.

Slide 4

### Performance Standards

- Identify school nutrition program responsibilities and requirements for accommodating children with food allergies or intolerances.
- Demonstrate methods for managing food allergies.

Slide 5

### Vocabulary

- Food allergy: A specific type of immune system response to a food.
- Allergen: A substance that causes an allergic reaction.
- Antibodies: A protein in the body that reacts and attaches to specific substances.
- Antigen: A protein or other substance that antibodies attach to.

Slide 6

### Vocabulary

- Mast cells: A type of immune system cell found in body tissues.
- Basophils: A type of immune system cell found in blood.
- Immunoglobulin E (IgE): A type of antibody found on basophils and mast cells.
- Anaphylaxis: A severe allergic reaction that results in a drop in blood pressure and difficulty breathing.

Slide 7

### Vocabulary

- Food intolerance: A sensitivity to a food that does not involve IgE.
- Celiac disease: A immune system reaction to gluten that causes damage to the lining of the intestine.
- Lactose intolerance: Inability to digest lactose.

Slide 8

### Vocabulary

- Medical Statement to Request Special Meals and/or Accommodations: Required form when meal accommodations are made to insure they are reimbursable.
- Cross-contact: When allergens from a food are transferred to another food.

Slide 9

### Immune System

- The immune system is the part of the body that fights infection.
- One way the immune system fights infection is through antibodies. Antibodies attach to antigens to make them unable to work and to signal to the immune system that an invasion is taking place.

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### Immune System

- The antibodies on basophils (immune system cells in the blood) and mast cells (immune system cells found in other types of body tissues) are called Immunoglobulin E, or IgE.
- IgE bind to antigens, which signals the mast cell or basophil to release immune system chemicals to fight the infection.

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### Food Allergies

- Food allergies occur when the body responds to an antigen in food by creating antibodies that attach themselves to this molecule. The binding of antibodies to the antigen causes the immune system to react, which causes the symptoms of a food allergy.
- When someone has a food allergy, it is sometimes called an IgE-mediated food allergy, because that is the type of antibody involved.

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### Symptoms of a Food Allergy

- An allergic reaction to a food can take from a few minutes to a few hours to show symptoms.

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### Symptoms of a Food Allergy

- Symptoms may include:
  - Swelling of the mouth, lips, and/or tongue
  - Itchiness in the mouth
  - Rash and/or hives
  - Runny nose
  - Throat tightness
  - Trouble breathing
  - Vomiting, diarrhea, GI pain
  - Anaphylaxis

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### Anaphylaxis

Anaphylaxis is the most dangerous food allergy reaction, because it can result in death if not treated quickly.

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### Symptoms of Anaphylaxis

- Symptoms include:
  - Drop in blood pressure
  - Hives, itching, swelling of the mouth, lips, tongue
  - Difficulty swallowing
  - Constriction of the airway, which can cause wheezing, difficulty breathing
  - Weak or rapid pulse
  - Nausea, vomiting, diarrhea
  - Dizziness or fainting

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### Anaphylaxis

- When someone has an anaphylactic reaction, injection with an epinephrine autoinjector (e.g. EpiPen) is necessary, followed by a visit to the emergency department to make sure symptoms don't return.

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### Most Common Food Allergens

- While an allergy can develop to almost any food or ingredient, these are the most common food allergies:
  1. Milk
  2. Eggs
  3. Peanuts
  4. Tree nuts
  5. Fish
  6. Shellfish
  7. Soy
  8. Wheat

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### Food Intolerance

- A food intolerance is a reaction to a food that is not IgE-mediated.
- Some food intolerances that you may encounter in your program are:
  - Celiac disease
  - Lactose intolerance

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### Celiac Disease

- Celiac disease is a reaction to gluten that results in the immune system attacking the lining of the gut.
- This leads to damage to the lining of the intestine that causes pain, diarrhea, gas, bloating. If the damage becomes bad enough, it can lead to malnutrition.
- Celiac disease is treated by removing gluten from the diet.

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### Celiac Disease: What to Avoid

- Those with celiac disease need to avoid WROB:
  - Wheat
  - Rye
  - Oats
  - Barley

Slide 21

### Lactose Intolerance

- Lactose intolerance happens when a person makes little or no lactase, the enzyme that digests lactose.
- Symptoms of lactose intolerance are bloating, gas, and/or diarrhea after eating foods containing lactose.
- Those with lactose intolerance need to avoid foods with lactose in order to avoid symptoms.

Slide 22

### Federal Requirements

- The US Department of Agriculture requires substitutions or modifications in the National School Lunch Program and School Breakfast program for children whose disabilities restrict their diet.
- Title 7, Code of Federal Regulations, sections 15.3(b) and 210.10(g)

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### Medical Statement to Request Special Meals and/or Accommodations

- The USDA requires a written medical statement to request special meals and/or accommodations to ensure that the child's meal is reimbursable.
- This form is available at: <http://www.cde.ca.gov/ls/nu/sn/fm.asp>
- This form must be signed by a recognized medical authority.

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### Recognized Medical Authority

- For a child with a disability, the recognized medical authority can be a:
  - Licensed physician
- For a child without a disability, but with a special dietary need, the recognized medical authority can be a:
  - Licensed physician
  - Physician assistant
  - Nurse practitioner

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### The American with Disabilities Act Amendments Act of 2008 (ADAAA)

- The ADAAA expanded the definition of disability to include “Major Bodily Functions”, which includes digestive and bowel functions, among others.
- This may mean that more children in your program could be identified as having a food-related disability.

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### Guidance for Accommodations

- The USDA Food and Nutrition Service is updating the guidance *Accommodating Children with Special Dietary Needs in the School Nutrition Programs, Guidance for School Food Service Staff*.
- For more information, see USDA FNS Memo SP 36-2013, CACFP 10-2013, SFSP 12-2013.

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### Accommodating Children with Food Allergies or Intolerances

- Generally those with a food allergy or intolerance do not have a disability as defined by the legislation.
- If a food allergy results in a severe, life-threatening reaction, it is considered a disability, and must be accommodated.
- The expanded definition of a disability may now also include celiac disease.

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### Accommodating Children with Food Allergies or Intolerances

- For other food allergies and intolerances, agencies may, but are not required to make accommodations.
- These accommodations still require a written medical statement, signed by a recognized medical authority.

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### Does this meet the requirements?

- A child's parent brings a note signed by a licensed vocational nurse that states the child has an intolerance to beans. Is this enough to make an accommodation?

Slide 30

### Does this meet the requirements?

- A child's parent brings a note signed by a licensed vocational nurse that states the child has an intolerance to beans. Is this enough to make an accommodation?
- **No.** A licensed vocational nurse is not a licensed medical authority, and a signed note is not a Medical Statement to Request Special Meals and/or Accommodations.

Slide 31

### Developing a Food Allergy Management Plan

- Have a written plan for how you will handle food allergies.
- Some questions to consider when developing a food allergy management plan:
  - Who will answer questions regarding menu items?
  - Who will be responsible for checking the ingredients used in menu items?
  - What steps should the kitchen staff follow to avoid cross-contact?
  - How should staff members handle an allergic reaction?

Slide 32

### Managing Food Allergies in the Kitchen and Cafeteria

- Know what to avoid and substitute
- Read labels
- Prepare the kitchen and cafeteria
- Identify the students
- Develop cleaning procedures

Slide 33

### Know What to Avoid and Substitute

- Ask parents of a child with a food allergy to provide a list of food ingredients to be avoided.
- Don't rely on lists of "safe" prepackaged food, as ingredients can change without warning.
- Include allergen information on your recipes to help identify which menu items may cause a reaction.

Slide 34

### Read Labels

- Develop a system for checking ingredient labels on all foods that will be served to a child with a food allergy.
- Be aware that some foods can have hidden allergens.

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### Hidden Allergens

- Examples:
  - Hot dogs and luncheon meat may have ingredients derived from milk.
  - Enchilada sauce or hot sauce may contain peanuts.
  - Imitation crab meat contains egg.
- For more information on hidden allergens:
  - NSFMI Reading Labels for Food Allergens Fact Sheet: <http://www.nfsmi.org/documentlibraryfiles/PDF/20090210032840.pdf>
  - Food Allergy Research and Education website: <http://www.foodallergy.org/allergens>

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### Prepare the Kitchen and Cafeteria

- Designate an area in the kitchen where allergy-free meals can be prepared.
- This area should be kept free of ingredients allergic students should avoid.
- Have allergy-free tables in the cafeteria for students who need them.

Slide 37

### Identify the Students

- Have a policy in place to identify the students moving through the cafeteria line that need allergen-free meals.

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### Develop Cleaning Procedures

- Designate a person responsible for ensuring that lunch tables and surrounding areas are thoroughly cleaned before and after lunch.
- Use a designated sponge or cleaning cloth for allergy-free tables.

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### Case Study

- Geneva is a child in third grade who has a milk allergy. Her parents don't keep milk in the house, and send her to school every day with a sack lunch. Her school has two lunch periods, and Geneva eats during the second one.
- One day, Geneva sits down at her usual table to eat her lunch, and then develops a rash on her hands and wrists.

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### Case Study

- What do you think is the cause of Geneva's rash?
- How could this be prevented?

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### Case Study

- What do you think is the cause of Geneva's rash?
  - Her rash was caused by milk residue left on the table, because it wasn't cleaned properly between lunch periods.
- How could this be prevented?
  - Wash the lunch tables between lunch periods with hot soapy water to remove the allergens.
  - Have a designated table for children with allergies, and make sure that it is thoroughly cleaned before they use it.

Slide 42

### Cross Contact

- Cross contact is when a food that does not contain an allergen comes into contact with a food that does.
- It does not have to be direct contact. For example, a knife used to spread peanut butter, if it is not cleaned thoroughly after use, could spread peanut protein to a jar of jam.

Slide 43

### Preventing Cross Contact

- Clean surfaces, equipment, pans, and utensils with hot, soapy water before preparing allergen-free foods.
- Use a separate cutting board for allergen-free foods.
- Wash hands with soap and water to remove allergens. Alcohol-based sanitizers are not effective.

Slide 44

### Preventing Cross Contact

- Use soap or commercial cleaning agents to remove allergens from table tops.
- If you are cooking several foods at the same time, cook allergen-free foods first, then keep them covered and away from other foods that are cooking.
- If you have handled any foods with allergens, wash hands thoroughly before serving allergen-free meals.

Slide 45

### HACCP for Food Allergies

- HACCP can be adapted to identify and control potential food allergy problems before they happen.

Slide 46

### HACCP Steps

1. Identify hazards
2. Identify control points
3. Establish critical limits
4. Establish monitoring procedures
5. Establish corrective actions
6. Establish verification procedures
7. Establish record-keeping procedures

Slide 47

### Identify Hazards

- Identify allergens in the foods in your kitchen and the menu items you prepare and serve.

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### Identify Control Points

- Receiving and Storage – Store allergen-free foods away from foods that contain allergens.
- Food Preparation – Designate a special prep area, cutting boards, knives, etc. to prevent cross contact.
- Cooking – Use clean equipment that has not been used to cook other foods, and cook allergen-free foods first.

Slide 49

### Identify Control Points

- Holding food – Hold allergen-free foods covered and away from other foods.
- Serving food – Wash hands thoroughly before serving allergen-free meals.

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### Establish Critical Limits

There are **no safe limits** of allergens. Even microscopic food particles are enough to cause a reaction!

Slide 51

### Establish Monitoring Procedures

- Establish who will monitor each critical control point to make sure that safe foods are used, and no cross contact occurs.
- Establish when and how this person will monitor the critical control point.

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### Establish Corrective Actions

- Establish what actions a monitor should take if a critical control point is not met.
- If an ingredient changes and now contains an allergen it did not have before, communicate this to all team members.
- If cross contact occurs, the items should be discarded and prepared fresh, taking care to prevent cross contact from occurring again.

Slide 53

### Establish Verification Procedures

- Make sure the HACCP plan is eliminating food allergy hazards

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### Establish Record-Keeping Procedures

- Decide what records need to be kept to:
  - Prevent ingredients or foods that contain allergens from being served to those with allergies
  - Determine if the HACCP plan is working

Slide 55

### Activity – Identify the Common Allergens

#### Breakfast Burrito

- |                              |                              |
|------------------------------|------------------------------|
| • Fresh large eggs           | • Fresh tomatoes, diced      |
| • Frozen whole-kernel corn   | • Yellow mustard             |
| • Low fat 1% milk            | • Hot pepper sauce           |
| • Fresh green peppers, diced | • Salt                       |
| • Fresh onions, diced        | • Reduced fat cheddar cheese |
|                              | • Flour tortillas            |

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### Activity – Identify the Common Allergens

#### Breakfast Burrito

- |                              |                                     |
|------------------------------|-------------------------------------|
| • <u>Fresh large eggs</u>    | • Fresh tomatoes, diced             |
| • Frozen whole-kernel corn   | • Yellow mustard                    |
| • <u>Low fat 1% milk</u>     | • Hot pepper sauce                  |
| • Fresh green peppers, diced | • Salt                              |
| • Fresh onions, diced        | • <u>Reduced fat cheddar cheese</u> |
|                              | • <u>Flour tortillas</u>            |

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### Activity – Identify Possible Hidden Allergens

#### Breakfast Burrito

- |                              |                              |
|------------------------------|------------------------------|
| • Fresh large eggs           | • Fresh tomatoes, diced      |
| • Frozen whole-kernel corn   | • Yellow mustard             |
| • Low fat 1% milk            | • Hot pepper sauce           |
| • Fresh green peppers, diced | • Salt                       |
| • Fresh onions, diced        | • Reduced fat cheddar cheese |
|                              | • Flour tortillas            |

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### Activity – Identify Possible Hidden Allergens

#### Breakfast Burrito

- |                              |                              |
|------------------------------|------------------------------|
| • Fresh large eggs           | • Fresh tomatoes, diced      |
| • Frozen whole-kernel corn   | • Yellow mustard             |
| • Low fat 1% milk            | • <u>Hot pepper sauce</u>    |
| • Fresh green peppers, diced | • Salt                       |
| • Fresh onions, diced        | • Reduced fat cheddar cheese |
|                              | • Flour tortillas            |

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### Activity – Identify Cross-Contact Concerns

#### Breakfast Burrito

- |                              |                              |
|------------------------------|------------------------------|
| • Fresh large eggs           | • Fresh tomatoes, diced      |
| • Frozen whole-kernel corn   | • Yellow mustard             |
| • Low fat 1% milk            | • Hot pepper sauce           |
| • Fresh green peppers, diced | • Salt                       |
| • Fresh onions, diced        | • Reduced fat cheddar cheese |
|                              | • Flour tortillas            |

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### Activity – Identify Cross-Contact Concerns

#### Breakfast Burrito

- Fresh large eggs
- Frozen whole-kernel corn
- Low fat 1% milk
- Fresh green peppers, diced
- Fresh onions, diced
- Fresh tomatoes, diced
- Yellow mustard
- Hot pepper sauce
- Salt
- Reduced fat cheddar cheese
- Flour tortillas

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### Review Questions

1. Which of the following is one of the most common food allergies?
  - a. Gluten
  - b. Strawberries
  - c. Wheat
  - d. MSG

Slide 62

### Review Questions

1. Which of the following is one of the most common food allergies?
  - a. Gluten
  - b. Strawberries
  - ☒ c. Wheat
  - d. MSG

Slide 63

### Review Questions

2. Food allergies are mediated by which of the following?
  - a. Immunoglobulin E (IgE)
  - b. Immunoglobulin G (IgG)
  - c. Histamine
  - d. Epinephrine

Slide 64

### Review Questions

2. Food allergies are mediated by which of the following?
  - ☒ a. Immunoglobulin E (IgE)
  - b. Immunoglobulin G (IgG)
  - c. Histamine
  - d. Epinephrine

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### Review Questions

3. Which of the following is NOT a symptom of a food allergy?
  - a. Itchiness in the mouth
  - b. Rash or hives
  - c. Runny nose
  - d. Fever

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## Review Questions

3. Which of the following is NOT a symptom of a food allergy?
- a. Itchiness in the mouth
  - b. Rash or hives
  - c. Runny nose
  - d. Fever

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## Review Questions

4. Which of the following statements about anaphylaxis is true?
- a. It is a symptom of celiac disease.
  - b. It is only caused by peanut allergies.
  - c. It can result in death if not treated.
  - d. It is treated with antihistamines.

Slide 68

## Review Questions

4. Which of the following statements about anaphylaxis is true?
- a. It is a symptom of celiac disease.
  - b. It is only caused by peanut allergies.
  - c. It can result in death if not treated.
  - d. It is treated with antihistamines.

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## Review Questions

5. People with celiac disease need to avoid which of the following?
- a. Wheat, Rice, Oats, and Barley
  - b. Wheat, Rye, Oats, and Barley
  - c. Rye, Rice, Oats, and Lactose
  - d. Wheat, Lactose, Casein, and Whey

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## Review Questions

5. People with celiac disease need to avoid which of the following?
- a. Wheat, Rice, Oats, and Barley
  - b. Wheat, Rye, Oats, and Barley
  - c. Rye, Rice, Oats, and Lactose
  - d. Whey, Lactose, Rye, and Oats

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## Review Questions

6. Which of the following can sign a Medical Statement to Request Special Meals and/or Accommodations?
- a. Registered nurse
  - b. Registered dietitian
  - c. Licensed pharmacist
  - d. Licensed physician

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### Review Questions

6. Which of the following can sign a Medical Statement to Request Special Meals and/or Accommodations?
- a. Registered nurse
  - b. Registered dietitian
  - c. Licensed pharmacist
  - d. Licensed physician

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### Review Questions

7. Which of the following is TRUE about accommodating food allergies and intolerances?
- a. Agencies are required to make accommodations for all allergies and intolerances.
  - b. Accommodations for food intolerances do not require a signed medical statement.
  - c. A food allergy that results in a severe, life-threatening reaction is considered a disability.
  - d. A note on a physician's letterhead can substitute for a signed medical statement.

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### Review Questions

7. Which of the following is TRUE about accommodating food allergies and intolerances?
- a. Agencies are required to make accommodations for all allergies and intolerances.
  - b. Accommodations for food intolerances do not require a signed medical statement.
  - c. A food allergy that results in a severe, life-threatening reaction is considered a disability.
  - d. A note on a physician's letterhead can substitute for a signed medical statement.

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### Review Questions

8. What is it called when a food that does not contain an allergen comes into contact with a food that does?
- a. Cross contact
  - b. Cross contamination
  - c. Hidden allergen
  - d. Control point

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### Review Questions

8. What is it called when a food that does not contain an allergen comes into contact with a food that does?
- a. Cross contact
  - b. Cross contamination
  - c. Hidden allergen
  - d. Control point

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### Review of Lesson Performance Standards

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Describe the differences between food allergies and intolerances.

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Describe the differences between food allergies and intolerances.

- A food allergy is an immune system reaction to a food that is mediated by Immunoglobulin E (IgE)
- A food intolerance is a reaction to a food that is not IgE mediated.
- A food allergy can cause life-threatening anaphylaxis, while a food intolerance can not.

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Identify the Eight Common Food Allergens

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Identify the Eight Most Common Food Allergens

1. Milk
2. Eggs
3. Peanuts
4. Tree nuts
5. Fish
6. Shellfish
7. Soy
8. Wheat

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Identify School Nutrition Responsibilities and Requirements for Accommodating Children with Food Allergies or Intolerances

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Identify School Food Service Responsibilities and Requirements for Accommodating Children with Food Allergies or Intolerances

- Schools must accommodate children with disabilities, and a life-threatening reaction to a food is considered a disability.
- For all other allergies and intolerances, schools may choose to make accommodations.
- Accommodations require a written medical statement signed by a medical authority.

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## Demonstrate Methods for Managing Food Allergies in the Kitchen and Cafeteria

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## Demonstrate Methods for Managing Food Allergies in the Kitchen and Cafeteria

- Know what to avoid and substitute
- Read labels
- Prepare the kitchen and the cafeteria
- Identify the students
- Develop cleaning procedures

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## Food Safety for Child Nutrition Programs

Thank You

Department of Nutrition  
University of California, Davis

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# Appendix

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## **Food Safety Certification Exam Options**

The California Retail Food Code (CRFC) states:

*Food facilities that prepare, handle, or serve nonprepackaged potentially hazardous food, except temporary food facilities, shall have an owner or employee who has successfully passed an approved and accredited food safety certification examination as specified in Sections 113947.2 and 113947.3. There shall be at least one food safety certified owner or employee at each food facility.*

The CRFC also states:

*Food safety certification required pursuant to Section 113947.1 shall be achieved by successfully passing an examination from an accredited food protection manager certification organization. The certification organization shall be accredited by the American National Standards Institute as meeting the requirements of the Conference for Food Protection's "Standards for Accreditation of Food Protection Manager Certification Programs."*

As of June 16, 2014, the American National Standards Institute has certified four organizations. If you would like to take a certified exam, all of these organizations list on their websites nearby testing stations. Some are listed by State and County, and others allow search by Zip Code.

### **1. 360training.com, Inc.**

- Learn2Serve® Food Protection Manager Certification Program
- <http://www.learn2serve.com/food-manager-certification>
- To find a testing center near you, click on "Locate a Test Center" and search by Zip Code. Instructions are provided on how to schedule an exam.

### **2. National Registry of Food Safety Professionals**

- Food Protection Manager Certification Program
- International Certified Food Safety Manager
- <http://www.nrfsp.com/>
- To search for a NRFSP exam near you, visit <http://www.nrfsp.com/NRFSP/Examinee%20Information/Examination%20Trainer%20Locator.aspx>
- You will be able to select your state and county to view a list of training and exam providers in your county.

### **3. National Restaurant Association**

- ServSafe® Food Protection Manager Certification Program
- <http://www.servsafe.com/home>
- To search for a ServSafe exam near you, visit <http://www.servsafe.com/ss/Search/TrainingSearchIP.aspx?aliaspath=/Special-Pages/ssredirect>
- You will be able to view a list of training and exam providers in your state.

**4. Prometric Inc.**

- Food Protection Manager Certification Program
- <https://www.prometric.com/en-us/clients/foodsafety/Pages/landing.aspx>
- To search for a Food Protection Manager Certification Program Exam near you, visit <https://securereg3.prometric.com/siteselection.aspx>
- You will be able to search for nearby exams by Zip Code.

For more information, visit:

<http://www.cdph.ca.gov/programs/pages/fdbRetailFoodProgram.aspx>

<https://www.ansica.org/wwwversion2/outside/ALLdirectoryListing.asp?menuID=8&prgID=8&status=4>

## Bacteria

Name	Type	Symptoms	Time to Onset	Food Sources	Preventive Measures
<b>Bacillus cereus</b> (is capable of forming spores)	Intoxication or toxin-mediated infection	Causes two types of illness: 1. Vomiting type: primarily causes nausea and vomiting, but may also cause diarrhea.	1. Vomiting type: 30 minutes to 6 hours	1. Vomiting type: Starchy foods, such as rice, potatoes, pasta, grains.	Time and Temperature Control: Properly cook, cool, and reheat foods
		2. Diarrhea type: Abdominal cramps and diarrhea	2. Diarrhea type: 8 to 16 hours	2. Diarrhea type: Meat, milk, stews, gravies	
<b>Campylobacter jejuni</b>	Infection	Abdominal cramps, diarrhea (sometimes bloody), fever, and vomiting	2 to 5 days	Poultry, unpasteurized milk, contaminated water	Time and Temperature Control: Properly cook, cool, and reheat foods Use potable water from non-contaminated sources
<b>Clostridium botulinum</b> (is capable of forming spores)	Intoxication	Causes botulism. Vomiting, diarrhea, blurred or double vision, muscle weakness, difficulty speaking and swallowing. Can cause respiratory failure and death.	12 to 36 hours	Improperly canned foods, untreated oil and garlic mixtures, baked potatoes, fermented fish, modified atmosphere packaged food, sous vide foods, vacuum-packed meats	Time and Temperature Control: Properly cook, cool, and reheat foods Do not use home-canned foods. Properly heat-process anaerobically-packed foods.
<b>Clostridium perfringens</b> (is capable of forming spores)	Intoxication	Diarrhea, abdominal cramps, sometimes nausea or vomiting	8 to 22 hours	Meat, stews, beans, gravy	Time and Temperature Control: Properly cook, cool, and reheat foods

# Bacteria, Viruses, Parasites, and Toxins that Cause Foodborne Illness

Name	Type	Symptoms	Time to Onset	Food Sources	Preventive Measures
<b>Escherichia coli</b> (shiga-toxin producing, e.g. O157:H7)	Infection or toxin-mediated infection	Abdominal pain, diarrhea (sometimes bloody), vomiting. Severe cases: kidney failure and hemolytic uremic syndrome (HUS) in severe cases	1 to 8 days	Undercooked meat, unpasteurized milk and juice, lettuce, alfalfa sprouts, contaminated water	Time and Temperature Control: Properly cook, cool, and reheat foods. Proper handwashing. Proper sanitation. Avoid cross-contamination
<b>Listeria monocytogenes</b> (note: can grow at refrigerator temperatures)	Infection	1. Healthy adults: Fever, muscle aches, nausea, diarrhea 2. Immune-compromised, elderly: septicemia, meningitis, encephalitis. 3. In pregnant women: birth defects, miscarriage, stillbirth	1 day to 6 weeks	Raw milk, unpasteurized cheeses, dairy items, ready-to-eat deli meats, processed ready-to-eat meats, raw vegetables, raw melon, seafood	Time and Temperature Control: Properly cook, cool, and reheat foods. Avoid cross-contamination Use only pasteurized milk and cheese. Wash produce thoroughly
<b>Salmonella species</b>	Infection	Diarrhea, fever, abdominal cramps, nausea, vomiting	6 to 48 hours	Eggs, poultry, meat, unpasteurized milk or juice, cheese, contaminated raw fruits (such as raw melon) and vegetables	Time and Temperature Control: Properly cook, cool, and reheat foods. Avoid cross-contamination
<b>Shigella species</b> (some can produce shiga toxins)	Infection	Diarrhea, fever, abdominal cramps. Stools may contain blood and mucus.	1 to 7 days	Cold salads (e.g. tuna, egg, chicken), raw produce, foods handled by an infected food handler	Time and Temperature Control: Properly cook, cool, and reheat foods. Avoid cross-contamination. Proper handwashing. Wash produce thoroughly
<b>Staphylococcus aureus</b>	Intoxication	Diarrhea, fever, abdominal cramps, nausea, vomiting	1 to 6 hours	Cream pastries, Improperly refrigerated meats, cold salads (e.g. tuna, egg, chicken)	Proper handwashing. Good personal hygiene. Time and Temperature Control: Properly cook, cool, and reheat foods.

## Viruses

Name	Type	Symptoms	Time to Onset	Food Sources	Preventive Measures
<b>Hepatitis A</b>	Viral infection	Diarrhea, fever, abdominal cramps, nausea, fatigue, loss of appetite, jaundice	10 to 50 days	Shellfish, salads, ready-to-eat food, fruit and juice, milk products, vegetables, ice, foods handled by an infected food handler, contaminated water.	Proper handwashing. Good personal hygiene. Avoid cross-contamination. Use approved sources for shellfish. Proper sanitation. Use potable water from non-contaminated sources.
<b>Norovirus or Norwalk virus</b>	Viral infection	Diarrhea, fever, abdominal cramps, nausea	24 to 48 hours	Contaminated water, contaminated salad ingredients, raw clams, raw oysters, foods handled by infected food handlers	Proper handwashing. Good personal hygiene. Avoid cross-contamination. Use potable water from non-contaminated sources
<b>Rotavirus</b>	Viral infection	Diarrhea, fever, abdominal cramps, nausea	24 to 72 hours	Water, ice, ready-to-eat foods, salads, foods handled by infected food handlers	Good personal hygiene. Avoid cross-contamination. Cook foods thoroughly. Use potable water from non-contaminated sources

## Parasites

Name	Type	Symptoms	Time to Onset	Food Sources	Preventive Measures
<b>Trichinella spiralis</b>	Parasite infection	Diarrhea, fever, nausea, fatigue,	2 to 28 days	Raw or undercooked pork, or wild game.	Cook foods thoroughly. Purchase meat from approved sources. Proper sanitation.
<b>Anisakis simplex</b>	Parasite infection	Coughing, fever, abdominal cramps, vomiting	1 hour to 2 weeks	Raw or undercooked seafood	Purchase seafood from approved sources. Freeze fish to be eaten raw for 7 days.
<b>Giardia duodenalis</b>	Parasite infection	Diarrhea, gas, abdominal cramps, nausea, weight loss, fatigue	24 to 72 hours	Contaminated water and ice, produce washed in contaminated water	Good personal hygiene. Use potable water from non-contaminated sources. Wash produce thoroughly.



Toxins

Name	Type	Symptoms	Time to Onset	Food Sources	Preventive Measures
<b>Ciguatoxin</b> (cooking will NOT inactivate the toxin)	Fish toxin originating from toxic algae in tropical waters	Vertigo, shortness of breath, nausea, hot and cold flashes, diarrhea, vomiting	15 minutes to 24 hours	Finfish from contaminated waters.	Purchase fish from approved sources.
<b>Scombrotoxin</b> (cooking will NOT inactivate the toxin)	Seafood toxin originating from histamine-producing bacteria	Dizziness, shortness of breath, burning feeling in mouth, facial rash or hives, peppery taste in mouth, headache, itching, teary eyes, runny nose	1 to 30 minutes	Tuna, mahi mahi, bluefish, sardines, amberjack, mackerel, anchovies, abalone, Swiss cheese	Purchase fish from approved sources; store fish between 32 degrees and 39 degrees temperatures to prevent the growth of histamine-producing bacteria

References:

Arduser, L., and Brown, D.R. (2005). *HACCP and Sanitation in Restaurants and Food Service Operations*. Ocala, FL: Atlantic Publishing Group, Inc.

Berger, L.M., and Parenteau, C.L. (2012). *Food Safety for Managers*. Boston, MA: BFSC, Inc.

Food and Drug Administration. (2012). *Bad Bug Book, Foodborne Pathogenic Microorganisms and Natural Toxins*. Second Edition. <http://www.fda.gov/Food/FoodbornIllnessContaminants/CausesOfIllnessBadBugBook/>

McSwane, D., Rue, N.R., and Linton, (2005). *R. Essentials of Food Safety and Sanitation*, 4th edition. Upper Saddle River, NJ: Pearson Education, Inc.

## Requirements for Lighting Intensity

The California Retail Food Code (Cal Code) requires that certain areas of the facility meet certain lighting requirements so that employees can safely perform certain tasks.

<b>Where</b>	<b>Required Lighting Level in Foot-Candles</b>	<b>Required Lighting Level in Lux</b>	<b>Measured where?</b>
Walk-in refrigeration units	10 foot-candles	108 lux	30 inches above the floor
Dry food storage areas	10 foot-candles	108 lux	30 inches above the floor
Inside equipment, such as reach-in or under-the-counter refrigerators	10 foot-candles	108 lux	30 inches above the floor
At a surface where food is provided for consumer self-service or where fresh produce or prepackaged foods are sold or offered for consumption.	20 foot-candles	215 lux	At the surface
In server stations where food is prepared.	20 foot-candles	215 lux	At the surface
Areas used for handwashing or warewashing	20 foot-candles	215 lux	30 inches above the floor
Areas used for equipment and utensil storage	20 foot-candles	215 lux	30 inches above the floor
Toilet rooms	20 foot-candles	215 lux	30 inches above the floor
All areas and rooms during periods of cleaning	20 foot-candles	215 lux	30 inches above the floor
Surface where a food employee is working with food or working with utensils such as knives, slicers, grinders, or saws where employee safety is a factor	50 foot-candles	540 lux	At the surface

### References:

Berger, L.M., and Parenteau, C.L. (2012). *Food Safety for Managers*. Boston, MA: BFSC, Inc.  
*California Retail Food Code*. (2012). Retrieved from:  
<http://www.cdph.ca.gov/services/Documents/fdbRFC.pdf>

## INTEGRATED PEST MANAGEMENT

Pests, such as insects and rodents, can be a serious problem in a restaurant. They can contaminate food supplies as well as damage facilities. More importantly, they can also contribute to foodborne illness and other diseases. Pesticides are often used to control pests but pesticides alone are not the solution. A better solution is to have an integrated pest management program (IPM) as part of your food safety program.

IPM is an approach to pest management that minimizes reliance on chemical pesticides. The three basic rules of an IPM program are to: deny pests access to the establishment; deny pests food, water, and a hiding or nesting place; and work with a licensed pest management professional (PMP) to eliminate pests that are in the establishment.

### Developing Your Program

The first step is to conduct a self-inspection of your restaurant to assess the state of your pest problems. This will help you to identify problem areas in your restaurant and correct these problems. Do so by:

- Developing a pest inspection checklist so you can conduct a thorough self-inspection. The list should include: date and time of inspection, temperature outside and inside the restaurant, pests observed (cockroaches, mice, rats, flies, other), evidence of pests (droppings, egg cases, nesting materials, gnaw marks in building structure or food packaging, grease markings) and location of evidence, deficiencies in building structure or equipment (holes, leaks, standing water, broken equipment, cracks and crevices, screens, doors and windows that are tight fitting, other), sanitation (grease, food or water accumulations and location, garbage and trash receptacles clean and covered) and corrective actions taken.
- Creating a map of your facility's interior and exterior layout so you can mark exactly where you found evidence of pests and where bait traps were placed.
- Bringing a flashlight and mirror on your inspection to help you better identify problems.
- Conducting self-inspections on a monthly basis. Routine self-inspections reduce the need for a PMP.

**NOTE:** Although you have conducted an in-house inspection, you may still need to hire a PMP who is trained to use pesticides in an environment, such as a restaurant.

### Working with a PMP

The PMP should perform an initial inspection and submit a detailed report to you. The report should outline your current pest problems and the PMP's recommendations for addressing the problems and recommendations of what you need to do to prevent further problems. The plan should include a schedule of service dates, pesticides to be used, and methods for treatment to eliminate pest problems.

Maintain your IPM reports in an on-site Pest Control Log book. After each pest control service, the PMP should make written recommendations and meet with you to discuss findings so you can implement needed changes. You should also use the Pest Control Log book to record all pest sightings and other problems seen between the PMP service visits. All problem areas

noted in the log book should be monitored by the PMP and your workers. Also before and after the PMP visits your restaurant, you need to:

- Prepare the area to be treated by covering all food, equipment, and tableware.
- Cover equipment and other food-contact surfaces that cannot be moved.
- Wash, rinse, and sanitize food-contact surfaces after the area has been treated.

### **Questions to Ask a PMP before Hiring**

- How long you been in business and can you provide references?
- Do you specialize in commercial treatments? If yes, how many restaurant accounts do you have?
- What pests are covered in the service contract?
- How many service calls are included in the price?
- Are there additional charges when extra service is needed to eliminate a contracted pest?
- What areas of the restaurant are excluded from the contract?
- Do you provide a "satisfaction guaranteed" clause?
- Will you assign one technician or will you rotate my restaurant to different technicians?
- Do you include written reports that highlight sanitation, construction, or other relevant deficiencies?
- Can I accompany the technician during visits?
- At what time are service calls usually made? Or if you have a preference for when the technician arrives, ask "Can you make service calls between the hours of "x" and "y"?"
- What pretreatment and post-treatment precautions and preparations should we perform at the restaurant?
- What chemicals do you use? Will they contaminate food or preparation surfaces? Are they safe for use in a restaurant?
- Can you provide Material Safety Data Sheets and the product labels for all pesticides that are used?
- How fast can the technician arrive in case of emergency?

By interviewing pest control companies before you have a problem, you can avoid hiring the wrong PMP for your establishment.

### **Denying Pests Access to Your Restaurant**

In addition to conducting self-inspections and scheduling regular PMP visits, there are steps you and your workers need to take to reduce pest problems. Here are some areas that you need to address.

#### **Deliveries**

- Routinely inspect incoming shipments of food, supplies, and delivery areas for insects and rodents.

#### **Doors, Windows, and Vents**

- Seal cracks and crevices and keep screens closed and in good condition.
- Close all openings that surround wiring, drain pipes, vents, and flues.
- Cover windows and vents with at least a 16-mesh wire screening.
- Repair cracks and gaps at all exterior doors and walls

- Install air curtains or fly fans that blow a steady stream of air that excludes flies at delivery entrances.

**Floors and Walls**

- Repair damaged floors and cover floors with a waterproof material, such as tile.
- Keep floor drains free of food particles and other debris.
- Install lighting away from exterior doors because lights attract many types of flying insects.
- Caulk and seal around light switches, bulletin boards, and vent hoods.
- Keep the building exterior and perimeter clean and free of clutter and debris that can harbor mice, rats, and other pests.
- Seal all pipes and electrical lines with wire mesh (copper pads) and/or caulking.
- Store garbage in sealed plastic bags in covered containers.

**Denying Pests Food and Shelter in Your Restaurant**

Garbage and trash are breeding places for microorganisms and insects and can serve as food for rodents. To prevent this:

- Keep garbage and trash in easily washed containers that have tight fitting lids that prevent flies from entering them.
- Use plastic liners for garbage cans to make it easier to keep containers clean.
- Wash garbage cans daily inside and out with hot, soapy water.
- Keep areas surrounding trash cans clean as possible.
- Use insect sprays and rodent traps in and near the garbage and waste area. Only use sprays approved by the US Environmental Protection Agency (EPA) for use in food establishments.
- Throw out garbage frequently and properly.
- Store recyclables in clean, pest-proof containers as far away from your building as local regulations allow.
- Keep your dumpster and dumpster pad area cleaned.

**Storage**

- Store all food and supplies properly and off of the floor.
- Keep foods covered and clean up spilled foods immediately.
- Clean storage areas thoroughly.
- Eliminate sources of food and shelter in outdoor dining areas.
- Remove foods, such as flour, sugar, pancake mix, from their original containers and place in approved sealed tight containers that are properly labeled.

**General**

- Follow instructions on product labels when using rodent poisons and pesticides.
- Only use those products approved by the US Environmental Protection Agency and your local health department.
- Eliminate conditions that allow pests to nest.
- Use trapping devices or other means of pests control.
- Keep work and dining areas free from debris.
- Compressor motors, such as those on refrigerators and freezers, are prime areas for roaches because they have ideal temperatures for breeding.
- Do not store foods longer than their recommended time.

**Pests Associated with Stored Food**

These pests can include moths and beetles that feed on and contaminate stored grains. Again, the best control is prevention. These measures include inspecting all incoming items for the presence of pests, throwing away and cleaning up all spilled or contaminated items promptly, and proper ground maintenance, which is important to reducing sources of pests. Stock rotation in accordance with first-in, first-out principles apply, as old stock is more likely to become infested. Adequate ventilation is necessary in order to reduce moisture levels. While prevention is the best control measure, existing infestations are best treated by a trained and knowledgeable PMP.

**Using and Storing Pesticides**

- Keep pesticides in their original containers. Never store pesticides in old food containers.
- Store pesticides in locked cabinets away from areas where food is stored and prepared.
- Check with your local Cooperative Extension or state regulatory agencies about the proper method for disposing of old or excess pesticides.
- Keep a copy of the corresponding product labels and Material Safety Data Sheets in your establishment.

## Identifying Pests

Pest	Unique Features	Prevention
Mice	<ul style="list-style-type: none"> <li>• Gnawing, droppings, tracks, and nesting materials</li> <li>• Defecate wherever they travel, but mostly where they feed.</li> <li>• Mice have poor vision, and frequently use the same paths or runways close to the walls.</li> <li>• Mice eat very little, but will contaminate large amounts of food by nibbling into stored products.</li> <li>• Mice need only a crack or hole the size of a dime to enter a building</li> </ul>	<ul style="list-style-type: none"> <li>• Place traps in their territories, which rarely exceed a 20-foot diameter.</li> <li>• Do not use baits indoors except in extreme situations.</li> </ul>
Rats	<ul style="list-style-type: none"> <li>• Rats need only a crack or hole the size of a quarter to enter a building.</li> </ul>	<ul style="list-style-type: none"> <li>• Place traps and bait in their territory, which may be up to 150 feet.</li> <li>• Check traps and area daily for dead rodents.</li> <li>• Rats may be "bait shy" and more cautious than mice. Subsequently, trapping and baiting can be less effective initially compared to "rat proofing."</li> </ul>
Ants	<ul style="list-style-type: none"> <li>• Ants most often nest outdoors in landscaped areas and under pavement, but may nest in wall voids.</li> <li>• Nest size can vary from several hundred to several thousand, and control begins with finding these nesting areas.</li> </ul>	<ul style="list-style-type: none"> <li>• Liquid treatments may help deter the ants but will not necessarily stop them. Treat nests where possible.</li> <li>• Baits placed near foraging trails can be very effective.</li> <li>• Caulk and seal around pipes and electrical lines to keep ants out.</li> </ul>

## Identifying Pests (continued)

Pest	Unique Features	Prevention
Cockroaches	<ul style="list-style-type: none"> <li>• Strong oily odor, fecal smears on surfaces, droppings (feces) that look like grains of black pepper, capsule-shaped egg cases that are brown, dark red, or black and may appear leathery, smooth, or shiny.</li> </ul>	<ul style="list-style-type: none"> <li>• Use a glue trap – container with sticky glue on the bottom –to identify what types of roaches are present.</li> <li>• Caulk and seal possible breeding areas.</li> <li>• Use baiting and crack and crevice treatments by a PMP.</li> <li>• Control humidity, as areas with 50% or less humidity will reduce the hatching of cockroach eggs.</li> </ul>

**Prepared by:**

Angela M. Fraser, Ph.D., Associate Professor/Food Safety Specialist  
 Department of Family and Consumer Sciences  
 NC State University, Raleigh, NC 27695-7605

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Employment and program opportunities are offered to all people regardless of race, color, national origin, sex, age, or disability through North Carolina State University, North Carolina A & T State University, U.S. Department of Agriculture, and local governments cooperating.



## Shellfish Tags

### What are shellfish tags?

Commercially sold shellfish are required to have a tag with certain information on it. This is so that shellfish involved in a foodborne illness outbreak can be traced to its origin.

### What is required on a shellfish tag?

Shellfish tags are required to have the following information:

1. Harvester's or dealer's name and address
2. Harvester's certification number, and original shellstock shipper's certification number
3. The date of harvesting
4. The most precise identification of the harvest location or aquaculture site possible.
5. The type and quantity of shellfish
6. The following statement, which must be in all caps, and bold: **"THIS TAG IS REQUIRED TO BE ATTACHED UNTIL CONTAINER IS EMPTY OR RETAGGED AND THEREAFTER KEPT ON FILE FOR 90 DAYS."**
7. The dealer's tag or label must also have the original shipper's certification number, including the state or country the shellfish were harvested in.

### After the shellfish is delivered, what do I do with the tag?

Shellfish tags need to be kept with original bag the shellfish came in, with the shellfish until it is all sold or served. If the shellfish is moved to another container, a copy of the tag needs to be in the container with the shellfish. Once all the shellfish has been sold or served, tags need to be kept on file in order they were received for a minimum of 90 days.

#### References:

*California Retail Food Code*. (2012). Retrieved from:  
<http://www.cdph.ca.gov/services/Documents/fdbRFC.pdf>

Sacramento County Environmental Management Department. 2012. Shellfish Tag Requirements. Retrieved from: [http://www.emd.saccounty.net/Documents/Info/EH/Food/EH\\_ShellfishTags\(English\).pdf](http://www.emd.saccounty.net/Documents/Info/EH/Food/EH_ShellfishTags(English).pdf)

### Minimum Internal Cooking Temperatures

Food	Minimum Internal Cooking Temperature	Time Required
<ul style="list-style-type: none"> <li>Fruits and vegetables that are cooked for hot holding</li> <li>Grains, rice, and pasta cooked for hot holding</li> </ul>	135° F	Not specified
<ul style="list-style-type: none"> <li>Raw shell eggs that are broken and prepared in response to a customers order for immediate service</li> <li>Fish</li> </ul>	145° F	15 seconds
<ul style="list-style-type: none"> <li>Single pieces of meat: beef, veal, lamb, pork, and game animals (e.g. steaks, chops)</li> </ul>	145° F	15 seconds
<ul style="list-style-type: none"> <li>Raw eggs that aren't broken and prepared for immediate service</li> <li>Ostrich and emu</li> <li>Injected meats</li> <li>Ground/minced meat of any kind (other than poultry)</li> </ul>	155° F	15 seconds
	145° F	3 minutes
	150° F	1 minute
	158° F	<1 second
<ul style="list-style-type: none"> <li>Poultry (including ground poultry)</li> <li>Stuffed fish, stuffed meat, stuffed poultry, stuffed ostrich, stuffed emu</li> <li>Stuffing containing fish, meat, poultry, ostrich, or emu</li> <li>Pasta and any other food stuff with fish, meat, poultry, ostrich, or emu</li> </ul>	165° F	15 seconds
<ul style="list-style-type: none"> <li>Roasts: beef, corned beef, pork, cured pork*</li> </ul>	130° F	112 minutes

\*At higher temperatures, roasts can be cooked for a shorter time. See section 114004 of the California Retail Food Code for more information.

#### References:

Berger, L.M., and Parenteau, C.L. (2012). *Food Safety for Managers*. Boston, MA: BFSC, Inc.

*California Retail Food Code*. (2012). Retrieved from:  
<http://www.cdph.ca.gov/services/Documents/fdbRFC.pdf>



# Food Safety Fact Sheet

2009

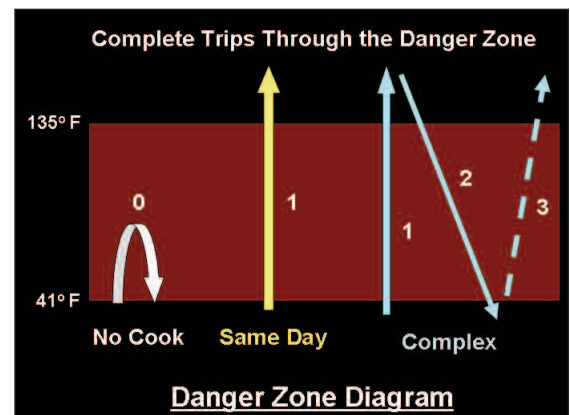
## Complex Process

### Introduction

The process approach simplifies developing a food safety program by placing menu items into three broad preparation processes based on the number of times the food passes through the temperature danger zone. These processes are no cook, same day service, and complex. Foodservice employees must monitor foods at various steps in the flow of food through the foodservice operation for each process and must control temperatures to ensure food safety.

### Here Are the Facts

Menu items in the **complex** process go through the temperature danger zone, during cooking, cooling, and when foods are reheated. Examples of these items will vary in different schools but may include turkey roasts, taco meat or chili, and leftovers. It is important to note that the same menu items may be grouped into different processes depending on how the item is prepared and the available equipment. For example, chili could be a complex item in one foodservice operation and a same day service process item in another operation.



Developing A School Food Safety Program Participant Workbook (2006).

The complex food preparation process include foods that require time and temperature control and have been cooled. The complex menu item flow chart shows points at which temperature control is very important and points at which monitoring and recordkeeping are needed.



## Application

**Follow standard operating procedures to control hazards for complex menu items.**

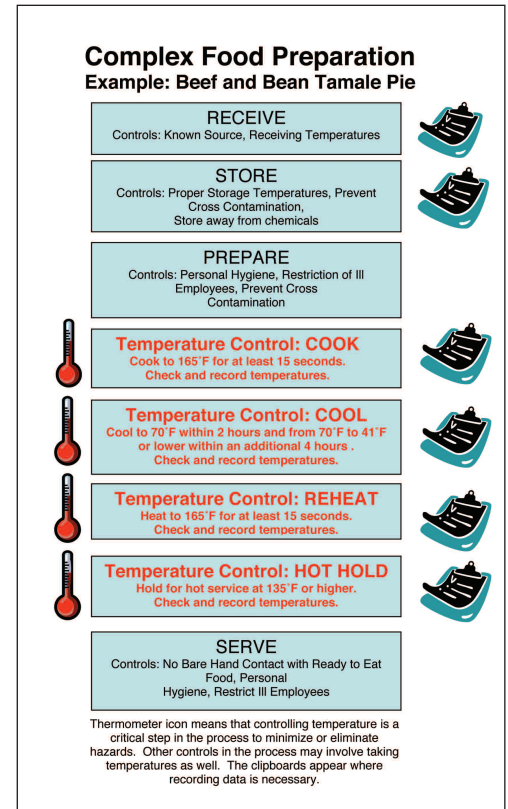
- Purchase foods from approved sources.
- Receive foods properly.
- Store foods properly, including separating food from chemicals.
- Use good personal hygiene.
- Follow proper handwashing practices.
- Prevent cross contamination.
- Limit time food is held in the temperature danger zone.
- Use sanitized, calibrated thermometer to take food temperatures.
- Verify food temperatures during cooking, cooling, reheating, and hot holding.
- Serve food so that there is no bare hand contact. Use appropriate utensils, deli paper, or single-use gloves.
- Restrict ill employees from working with food.

## Monitor and record time and temperatures of complex menu items throughout the flow of food.

- Check and record food temperature when food is received.
- Check and record time and temperature of food in storage.
- Check and record time and end-point cooking temperatures.
- Check and record time and temperature of food during cooling.
- Check and record time and temperature of food during reheating.
- Check and record time and temperature of food during hot holding.

## Control time and temperature of complex menu items during cooking, cooling, reheating, and hot holding.

- Cook same day service menu items to the appropriate end-point cooking temperatures. For example, chicken should be cooked to 165 °F for 15 seconds and hamburger patties should be cooked to 155 °F for 15 seconds.
- Cool food properly.
  - ▶ Cool food from 135 °F–70 °F in 2 hours.
  - ▶ Cool food from 70 °F–41 °F in an additional 4 hours.
  - ▶ Use immediate and appropriate corrective actions when cooling guidelines are not met.



Developing A School Food Safety Program:  
Participant Workbook Complex Food Preparation  
(2006).

## Control time and temperature of complex menu items during cooking, cooling, reheating, and hot holding, continued

- Reheat food to 165 °F for 15 seconds within 2 hours.
- Hold complex menu items at 135 °F or above.
- Limit the time that complex menu items are in the temperature danger zone.

## Take corrective action to make sure that cleaning and sanitizing is done properly.



- Wash, rinse, and sanitize dirty food contact surfaces.
- Sanitize food contact surfaces if it cannot be determined if they have been sanitized properly.
- Discard food that comes in contact with food contact surfaces that have not been sanitized properly.

**HACCP-Based SOPs**

**Cooking and Reheating Temperature Log**

**Instructions:** Record product name, time, the two temperatures/times, and any corrective action taken on this form. The foodservice manager will verify that foodservice employees have taken the required cooking temperatures by visually monitoring foodservice employees and preparation procedures during the shift and reviewing, initialing, and dating this log daily. Maintain this log for a minimum of 1 year.

Date and Time	Food Item	Internal Temperature/Time	Internal Temperature/Time	Corrective Action Taken	Initials	Verified By/Date

USDA  

1

HACCP-Based Standard Operating Procedures: Cooking and Reheating Temperature Log (2005).

**Remember, follow state or local health department requirements.**

## References

- U.S. Department of Agriculture, Food and Nutrition Service, & National Food Service Management Institute. (2006). *Developing a school food safety program: Participant's workbook*. University, MS: Author.
- U.S. Department of Agriculture, Food and Nutrition Service, & National Food Service Management Institute. (2005). *HACCP-based standard operating procedure: Cooking and reheating temperature log*. Retrieved January 8, 2009, from <http://www.nfsmi.org/documentLibraryFiles/PDF/20080213012437.pdf>
- U.S. Department of Agriculture, Food and Nutrition Service, & National Food Service Management Institute. (2002; Rev. ed. 2009). *Serving it safe (2nd ed.)*. University, MS: Author.
- U.S. Department of Health and Human Services Public Health Services, Food and Drug Administration. (2005). *FDA food code*. Retrieved January 8, 2009, from <http://www.cfsan.fda.gov/~dms/fc05-toc.html>

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**For more information, contact NFSMI at 800-321-3054 or [www.nfsmi.org](http://www.nfsmi.org).**

## Food Safety Resources

### Websites:

California Healthy Kids Resource Center Food Safe School Framework

[http://www.californiahealthykids.org/food\\_safe](http://www.californiahealthykids.org/food_safe)

California Retail Food Code (CalCode)

<http://www.cdph.ca.gov/programs/pages/fdbRetailFoodProgram.aspx>

FDA Bad Bug Book

<http://www.fda.gov/Food/FoodborneIllnessContaminants/CausesOfIllnessBadBugBook>

FDA Employee Health and Personal Hygiene Handbook

<http://www.fda.gov/Food/GuidanceRegulation/RetailFoodProtection/IndustryandRegulatoryAssistanceandTrainingResources/ucm113827.htm>

FDA Food Code

<http://www.fda.gov/Food/GuidanceRegulation/RetailFoodProtection/FoodCode/default.htm>

FDA, USDHHS, CFSAN: Managing Food Safety: A Manual for the Voluntary Use of HACCP Principles for Operators of Food Service and Retail.

<http://www.fda.gov/Food/GuidanceRegulation/HACCP/ucm2006811.htm>

Fight Bac!

<http://www.fightbac.org>

Food Allergy Research and Education

<http://www.foodallergy.org/>

FoodSafety.gov

<http://www.FoodSafety.gov>

Iowa State Extension Food Safety

<http://www.extension.iastate.edu/foodsafety/>

Kansas State University Center of Excellence Food Safety Research in Child Nutrition Programs

<http://cnsafefood.k-state.edu/>

National Coalition for Food Safe Schools

<http://www.foodsafeschools.org/>

National Food Service Management Institute

<http://www.nfsmi.org>

National Education Association Health Information Network: The Food Allergy Book  
What School Employees Need to Know.

<http://www.neahin.org/educator-resources/foodallergybook.html>

School Nutrition Association: Food Allergy Resource Center

<http://www.schoolnutrition.org/Content.aspx?id=17241>

School Nutrition Association: Sanitation and Food Safety

<http://www.schoolnutrition.org/Content.aspx?id=90>

USDA Food and Nutrition Service Food Safety Resources

<http://www.fns.usda.gov/food-safety/food-safety-resources>

USDA National Agricultural Library Allergies and Food Sensitivities

<http://fnic.nal.usda.gov/diet-and-disease/allergies-and-food-sensitivities>

USDA National Agricultural Library Food Safety Research Information Office

<http://fsrio.nal.usda.gov/>

### **Books:**

Arduser, L., and Brown, D.R. (2005). *HACCP and Sanitation in Restaurants and Food Service Operations*. Ocala, FL: Atlantic Publishing Group, Inc.

Berger, L.M., and Parenteau, C.L. (2012). *Food Safety for Managers*. Boston, MA: BFSC, Inc.

Keller, J.J. and Associates. (2004). *Employee Food Safety Handbook*. Neenah, WI: J.J. Keller and Associates, Inc.

McSwane, D., Rue, N.R., and Linton, (2005). R. *Essentials of Food Safety and Sanitation*, 4th edition. Upper Saddle River, NJ: Pearson Education, Inc.

Schaefer, J.J. 2011. *Serving People with Food Allergies*. Boca Raton, FL: Taylor and Francis Group, LLC.

## Enhancing the School Food Safety Program

Nutrition Services Division Management Bulletin	
<b>Purpose:</b> Policy, Action Required, Beneficial Information	
<b>To:</b> School Nutrition Programs Sponsors	<b>Number:</b> USDA-SNP-15-2011
<b>Attention:</b> Food Service Directors	<b>Date:</b> December 2011
<b>Subject:</b> Enhancing the School Food Safety Program	
<b>Reference:</b> U.S. Department of Agriculture, Food and Nutrition Service, Policy Memo SP 37-2011	

This Management Bulletin (MB) notifies School Nutrition Program sponsors of new U.S. Department of Agriculture requirements for all food safety programs (FSPs) operated in a school.

This requirement pertains to participants of the National School Lunch Program, School Breakfast Program, Special Milk Program, the Fresh Fruit and Vegetable Program, and the Afterschool Care Programs.

### Background

On December 13, 2010, President Obama signed the Healthy, Hunger-Free Kids Act of 2010 (Act), reauthorizing the Child Nutrition Programs. Section 205 of the Act amended section 9(h)(5) of the Richard B. Russell National School Lunch Act, by modifying requirements for school FSPs. It requires that school FSPs apply the Hazard Analysis and Critical Control Points (HACCP) principles not only to the cafeteria but also to any facility where food is stored, prepared, or served.

### Requirements

Standard operating procedures in school FSPs must be updated to include **any facility or part of a facility where food is stored, prepared, or served**. The HACCP principles for food served in the cafeteria apply to all other facilities and can include, but are not limited to the following:

- School buses
- Hallways on school campuses
- School courtyards
- Kiosks
- Classrooms

### Implementation

These requirements have been effective since July 1, 2011.

If you have any questions regarding this MB, please contact Stephanie Enright, Child Nutrition Consultant in the School Nutrition Programs Unit, by phone at 916-323-0122 or by e-mail at [senright@cde.ca.gov](mailto:senright@cde.ca.gov).



## New Policy Change for Food Safety Inspections

Nutrition Services Division Management Bulletin	
<b>Purpose:</b> Policy, Action Required, Beneficial Information	
<b>To:</b> School Nutrition Program Sponsors	<b>Number:</b> USDA-SNP-12-2013
<b>Attention:</b> Food Service Directors	<b>Date:</b> May 2013
<b>Subject:</b> New Policy Change for Food Safety Inspections	
<b>Reference:</b> U.S. Department of Agriculture Policy Memos SP 39-2008 and SP 45-2011; Federal Register Vol. 74, No. 169, September 2, 2009; and Title 7, <i>Code of Federal Regulations</i> , sections 210.13 and 220.7	

This Management Bulletin (MB) notifies School Nutrition Program sponsors of a policy change pertaining to the mandatory school food safety inspection requirements; specifically, documentation requirements demonstrating attempt to schedule food safety inspections by School Food Authorities (SFA) that fail to obtain the required two inspections per year.

### Background

Title 7, *Code of Federal Regulations*, sections 210.13 and 220.7 that govern the National School Lunch Program (NSLP) and School Breakfast Program (SBP), respectively; require that all participating school sites obtain **two** annual food safety inspections from the state or local governmental agency responsible for food safety inspections

### Policy Change

For those SFAs that fail to obtain the two mandatory food safety inspections, the California Department of Education (CDE) requests that they submit a copy of the response from their local environmental health department, stating why the health department could not conduct the inspections. If the SFA did not receive a response, the CDE will request a copy of the letter sent to the local environmental health department requesting the inspections. In November 2013, the CDE will notify all SFAs that did not meet the federal requirement, and provide details for how they can submit their documentation to the CDE.

**Please note, all SFAs that receive the two mandatory food safety inspections every school year will not need to submit documentation to the CDE.**

It is important that all SFAs submit a letter in writing to their local environmental health department requesting the inspections for every school site, and keep a copy of this letter on file. If the local environmental health department is unable to conduct the inspections, the SFA should request a response in writing from the local environmental health department, and keep the response on file.

For those SFAs that have not received both of their food safety inspections for the 2012–13 school year, they should immediately contact their local environmental health department to schedule their inspection(s) prior to the end of this school year.

The CDE recommends that SFAs contact their local environmental health department early in the school year to allow inspectors time to annually conduct the mandated two food safety inspections. Please note that it is the responsibility of the SFA to request the two food safety inspections from their local environmental health department and to document their request.

If you have any questions related to this MB, please contact Stephanie Enright, Child Nutrition Consultant, Northern School Nutrition Programs Unit, by phone at 916-323-0122 or by e-mail at [senright@cde.ca.gov](mailto:senright@cde.ca.gov).



# BEST PRACTICES

## HANDLING FRESH PRODUCE IN SCHOOLS

Fruits and vegetables are an important part of a healthy diet. Introducing children to them in schools will improve their present and future health. Fresh produce must be handled safely to reduce the risks of foodborne illness. There are a number of steps that foodservice employees can take to minimize the chances for fruits and vegetables they handle to become contaminated. Best practices for handling all types of produce are described in this fact sheet, along with practices specific to leafy greens, tomatoes, melons, and sprouts.

Contamination of produce with harmful microorganisms can occur at all stages of production, processing, transportation, storage, preparation, and service. To prevent foodborne illness, fresh produce needs to be handled with care at each step from farm to table.

# Recommendations For Handling Fresh Produce



## PURCHASING AND RECEIVING

- Use purchasing specifications that include food safety requirements, such as maintaining produce at the proper temperature, maintaining clean and pest-free storage areas and delivery vehicles, and complying with federal and state food safety laws and regulations.
- Ensure suppliers are getting produce from licensed, reputable sources.
- Check storage and handling practices of vendors.
- Establish procedures for inspecting and accepting or rejecting incoming deliveries. Procedures should include checking the condition of the fresh produce and the transportation vehicles to make sure specifications are met.



## WASHING AND PREPARATION

- Inspect produce for obvious signs of soil or damage prior to cutting, slicing, or dicing. When in doubt about damaged produce, either cut away the affected areas or do not use the item.
- Wash produce before serving or cutting using either:
  - Continuous running water.
  - Chemical disinfectants, used according to the manufacturer's label instructions for recommended concentration and contact time. *Note: Do not soak produce or store in standing water.*
- Do not rewash packaged produce labeled "ready-to-eat," "washed," or "triple washed."
- Wash thoroughly with hot soapy water all equipment, utensils, and food contact surfaces that come into contact with cut produce. Rinse, sanitize, and air-dry before use.



## HAND HYGIENE

- Wash hands thoroughly with soap and water before handling or cutting fresh produce. Rewash hands after breaks, visiting restrooms, sneezing, coughing, handling trash or money, or anytime hands become soiled or otherwise contaminated.
- Use a barrier such as gloves, deli paper, or an appropriate utensil to touch ready-to-eat produce. *Note: This does not eliminate the need for frequent proper handwashing.*
- Always wash hands before putting on disposable gloves.
- Change disposable gloves anytime the gloves may have been contaminated or when changing tasks.
- Do not wash or reuse disposable gloves.
- Change disposable gloves if they are torn or damaged.





## SERVING

- Do not store produce in direct contact with ice or water while on display on serving lines and salad bars.
- Mark the time when cut produce is displayed without refrigeration. Display cut produce for a maximum of 4 hours if not in a refrigeration unit or containers surrounded by ice. Discard any uneaten produce at the end of 4 hours.
- Create safe salad bars and self-service lines by taking the following actions:
  - Protect food with sneeze guards or food shields in a direct line between the food and the mouth or nose, usually 14 to 18 inches above the food.
  - Use cleaned and sanitized long-handled tongs, spoons, and ladles so bare hands do not touch food and the utensils do not drop into the serving pans.
  - Change utensils periodically.
  - Set up the salad bar or self-service line as close to mealtime as possible to reduce the time that produce sits out.
  - Keep cold foods at or below 41°F in a refrigeration unit or surrounded by ice.
  - Monitor and document the internal temperature of self-service items every 30 minutes as with other foods on the service lines.
  - Clean up spills promptly. Wiping clothes should be stored in sanitizing solution and laundered daily.
  - Teach children salad bar etiquette. Assign an adult to monitor the salad bar and self-service line to make sure the customers—especially children—are not touching food with their hands, tasting food while in line, putting their heads under the sneeze guard, or returning food items.
  - Clearly label all salad dressings and other containers to discourage tasting.
  - Never add freshly prepared food to food already on salad bars and self-service lines.

## STORAGE

- Maintain produce at the temperature recommended for the variety and particular stage of ripeness.
- Store produce at least 6 inches off the floor, including in walk-in refrigerators.
- Store produce in a covered container and above other items that might cause contamination.
- Follow manufacturer's instructions for the product such as "keep refrigerated" or "best if used by."
- Establish a policy for produce that is cut in-house to specify how long the refrigerated cut product may be used. Mark the product with "prepared on" or "use by" date.
- Wash produce just before preparation, not before storage.

## TRAINING AND GENERAL FOOD SAFETY PRACTICES

- Develop training programs to teach the importance of food safety and proper handling of produce to all food handlers.
- Practice good food safety and food handling techniques to prevent cross-contamination.



# Recommendations For Specific Types Of Produce



## MELONS

- Avoid using whole melons that have visible signs of decay or damaged rinds (such as mechanical damage or cracking) due to the increased risk that harmful bacteria may have contaminated the melons.
- Wash the outer surface of the melon thoroughly under running cool tap water to remove surface dirt. Scrub melons with a clean produce brush before cutting. Cut away any bruised or damaged areas before serving.
- Discard cut melons after 4 hours if maintained at 41°F or above. If possible, display cut melons in a refrigerated case, not just on top of ice.
- Display cut melons for a maximum of 4 hours without being kept cool with refrigeration or ice and discard uneaten melons at the end of 4 hours.
- Mark the date on refrigerated cut melons to indicate that they must be consumed or discarded within 7 days.



## TOMATOES

- Do not wash tomatoes in cold water. Use wash water temperatures that are at least 10°F warmer than the internal tomato temperature to prevent exterior bacteria from entering the interior of the tomato during washing.
- Ensure whole tomatoes are free from obvious signs of soil and skin damage, such as punctures, prior to cutting, slicing, or dicing. Either cut away any bruised or damaged areas, or do not use the tomato.
- Hold tomatoes at 41°F or below after cutting, including during display on serving lines and salad bars.
- Ensure the temperature of tomatoes purchased as fresh-cut (i.e., sliced, diced, or chopped) is 41°F or lower upon delivery and the tomatoes were kept cool continuously during transport. Reject fresh-cut tomatoes delivered at a temperature higher than 41°F.
- Mark the date on refrigerated cut tomatoes to indicate that they must be consumed or discarded within 7 days.
- Do not store cut tomatoes in direct contact with ice or water.



## LEAFY GREENS

- Do not use leafy greens with visible signs of decay or damage because there is an increased risk of the presence of harmful bacteria. When in doubt about the use of decayed or damaged product, either remove the unusable portions or do not use the leafy greens.
- Do not rewash packaged produce labeled "ready-to-eat," "washed," or "triple washed."

## SPROUTS

Due to the increasing number of illnesses associated with eating raw sprouts, the Food and Drug Administration has advised all consumers—especially children, pregnant women, the elderly, and persons with weakened immune systems—to not eat raw sprouts as a way to reduce the risk of foodborne illness. All sprouts should be cooked thoroughly before eating to reduce the risk of illness.

## Resources

Council for Agricultural Science and Technology. **Food Safety and Fresh Produce: An Update.**  
Available at <http://www.cast-science.org/publications.asp>

Food and Drug Administration. **Draft Guidance for Tomatoes, Leafy Greens, and Melons.**  
Available at <http://www.fda.gov/Food/FoodSafety/Product-SpecificInformation/FruitsVegetablesJuices/FDAProduceSafetyActivities/ucm174086.htm>

Food and Drug Administration. **Safe Handling of Raw Produce and Fresh-Squeezed Fruit and Vegetable Juices.**  
Available at <http://www.cfsan.fda.gov/~dms/prodsafe.html>

National Restaurant Association. **Guidelines on How to Keep Salad Bars Safe.**  
Available at [http://www.restaurant.org/foodsafety/how\\_to\\_salad.cfm](http://www.restaurant.org/foodsafety/how_to_salad.cfm)

U.S. Department of Agriculture. **Fresh Fruit and Vegetable Program Handbook.**  
Available at <http://www.fns.usda.gov/cnd/FFVP/Resources/FFVPhandbookFINAL.pdf>

U.S. Department of Agriculture. **Fruits & Vegetables Galore: Helping Kids Eat More.**  
Available at [http://www.fns.usda.gov/TN/Resources/fv\\_galore.html](http://www.fns.usda.gov/TN/Resources/fv_galore.html)

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Information about this and other topics may be obtained by contacting the  
NATIONAL FOOD SERVICE MANAGEMENT INSTITUTE,  
The University of Mississippi; Telephone: 800.321.3054; Item number ET100-10





# Handling Fresh Produce on Salad Bars\*

**Follow these recommendations to reduce the risk of foodborne illness from salad bars or self-service lines. Follow your school district's food safety plan for appropriate actions when temperature standards are not met.**

## Preparation and Set Up

- Use equipment with food shields or sneeze guards. In elementary schools, equipment with a solid barrier between the students and the food is recommended.\*\*
- Consider offering pre-packaged or pre-portioned items for students in all grades. In elementary schools, pre-packaged or pre-portioned items are recommended for all self-service items.\*\*
- Place a clean and sanitized utensil in each container on the salad bar. Replace utensils at the beginning of each meal period.
- Label containers to identify foods and condiments.
- Use dispensers or single-use packages for salad dressings and other condiments.
- Set up the salad bar just prior to serving time.
- Select container size so that food is used within one meal period.
- Provide individually wrapped eating utensils, or keep unwrapped utensils in containers with the handles up.

## Temperature Control

- Verify that the temperature of equipment is at 41 °F or below before use.
- Check to be sure the bottom of the pan comes into contact with the ice or ice pack, when using them for temperature control.
- Chill foods to an internal temperature of 41 °F or below before placing on the salad bar.
- Check and record internal temperatures of each food item with a clean, sanitized, and calibrated thermometer before placing it on the salad bar. Check at least every two hours to verify that it remains at or below 41 °F.

## Supervision

- Consider using a serving line with a solid food shield in elementary schools, allowing students to select items for assisted service rather than self-service. Employees place selected items on a plate or tray, then pass it over the food shield to students.\*\*



## Handling Fresh Produce on Salad Bars, continued

- Monitor self-service salad bar in middle and high schools to ensure that students do not:
  - ◆ Touch food with bare hands.
  - ◆ Touch food with clothing or jewelry.
  - ◆ Cough, spit, or sneeze on food.
  - ◆ Use utensils in multiple containers.
  - ◆ Place foreign objects in food.
  - ◆ Place dropped food or utensils back into containers.
  - ◆ Use the same plate or tray on subsequent trips.
- Assist students with utensils, if needed.
- Avoid adding or layering freshly prepared food on top of food already on salad bars and self-service lines. Check with your state or local health department for regulations on replenishing food.
- Use a clean cloth or towel dipped in sanitizing solution to wipe surfaces during and between meal periods. Store sanitizing solution away from salad bar.

### Clean Up

- Remove food immediately after the last meal period.
- Cover, label, date, and refrigerate food remaining at the end of service if it will be served the following day.
- Discard food that may have been contaminated, either unintentionally or intentionally.
- Use chemical sprays only after all food has been removed.

\*These best practices are based on the 2009 FDA Food Code. Follow the food code for your local or state jurisdiction. Consult with your local health department if you have any questions. [www.fda.gov/Food/FoodSafety/RetailFoodProtection/FoodCode/FoodCode2009/default.htm](http://www.fda.gov/Food/FoodSafety/RetailFoodProtection/FoodCode/FoodCode2009/default.htm)

\*\*Recommendations based on 2010 NSF International/American National Standard Institute (ANSI) Standard 2 for Food Equipment. [www.nsf.org](http://www.nsf.org)

These best practices are consistent with NFSMI's Standard Operating Procedures for Holding Hot and Cold Potentially Hazardous Foods and Preventing Contamination at Food Bars.

<http://nfsmi.org/documentlibraryfiles/PDF/20080213010741.pdf>

<http://nfsmi.org/documentlibraryfiles/PDF/20080213011044.pdf>



# Food Safety Fact Sheet

2009

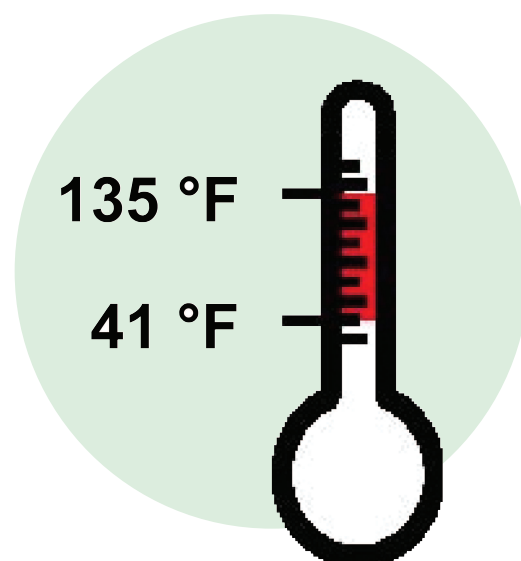
## Controlling Time and Temperature During Preparation

### Introduction

Preparation is an important step in the flow of food. Foodservice employees can use good food handling practices during preparation to ensure that food temperatures are controlled and the time that foods are in the temperature danger zone is minimized.

### Here Are the Facts

The temperature danger zone, between 41 °F and 135 °F, is the temperature range in which bacteria grow most rapidly.



### Application

#### **Limit the time that foods are in the temperature danger zone during preparation.**

- Pre-chill ingredients for cold foods, such as sandwiches, salads, and cut fruits, to 41 °F or below before combining with other ingredients.
- Prepare foods as close to serving times as the menu will allow.
- Prepare food in small batches. For example, when assembling deli sandwiches, remove only enough meat and cheese to prepare 25 sandwiches. Return the sandwiches to the refrigerator and then remove enough meat and cheese to prepare another 25 sandwiches.
- Limit the time for preparation of any batches of food so that the ingredients are not at room temperature for more than 30 minutes before cooking, serving, or returning to the refrigerator.
- Chill all cold foods as quickly as possible.



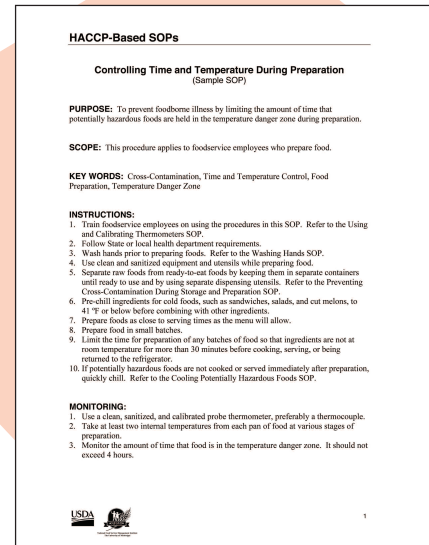


## Monitor the time and temperatures of foods during preparation.

- Use a clean, sanitized, and calibrated thermometer (preferably a thermocouple) to check temperatures.
- Take at least two internal temperatures from each pan of food at various stages of preparation.
- Monitor the amount of time that food is in the temperature danger zone. It should not exceed 4 hours.

## Take corrective action to make sure that time and temperature are maintained during preparation.

- Begin the cooking process immediately after preparation for any foods that will be served hot.
- Cool rapidly any ready-to-eat foods or foods that will be cooked at a later time.
- Return ingredients to the refrigerator if the anticipated preparation time is expected to exceed 30 minutes.
- Discard food held in the temperature danger zone for more than 4 hours.



HACCP-Based Standard Operating Procedures:  
Controlling Time and Temperature Preparation  
(2005).

**Remember, follow state or  
local health department requirements.**

## References

- U.S. Department of Agriculture, Food and Nutrition Service, & National Food Service Management Institute. (2005). *HACCP-based standard operating procedure: Controlling time and temperature during preparation*. University, MS: Author.
- U.S. Department of Health and Human Services Public Health Services, Food and Drug Administration. (2005). *FDA food code*. Retrieved January 8, 2009, from <http://www.cfsan.fda.gov/~dms/fc05-toc.html>

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**For more information, contact NFSMI at 800-321-3054 or [www.nfsmi.org](http://www.nfsmi.org).**

# Accommodating Children with Special Dietary Needs

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## Nutrition Services Division Management Bulletin

**Purpose:** Policy, Beneficial Information

**To:** Child Nutrition Program Sponsors

**Number:** CNP-07-2014

**Attention:** Food Programs/Service Directors

**Date:** June 2014

**Reference:** FNS Instruction 783-2, Meal Substitutions for Medical or Other Special Dietary Reasons; Title 7, *Code of Federal Regulations*, sections 15.3(b) and 210.10(g); U.S. Department of Agriculture Policy Memorandum SP 36-2013, CACFP 10-2013, SFSP 12-2013: Guidance Related to the Americans With Disabilities Act Amendments Act

**Supersedes:** Management Bulletin USDA-CNP-03-2013

**Subject:** Guidelines for Accommodating Children with Special Dietary Needs in Child Nutrition Programs

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This Management Bulletin (MB) provides clarification to Child Nutrition Program (CNP) sponsors regarding further direction on the process, requirements, options, and resources for accommodating children, with and without disabilities, who have special dietary needs. Federal legislation and regulations are in place to ensure that children with disabilities have the same opportunities as other children. This includes education and education-related benefits, such as school meals.

This MB contains updated information regarding the Americans with Disabilities Act Amendments Act of 2008 (ADAAA) and the appropriate use of the Individualized Education Plan (IEP). It is recommended that this MB be read in its entirety.

This MB applies to agencies and sponsors of School Nutrition Programs (SNP), the Child and Adult Care Food Program (CACFP), and the Summer Food Service Program (SFSP). For the purpose of this MB, these entities will be collectively referred to as Agencies.

### Background Legislation and Regulation

The Rehabilitation Act of 1973, the Education of the Handicapped Act of 1975, and the Americans with Disabilities Act of 1990 state that persons with disabilities have the support of these laws that prohibit discrimination and require that children be provided with a free and appropriate public education.

U.S. Department of Agriculture (USDA) regulations under Title 7, Code of Federal Regulations (7 CFR), sections 15.3(b) and 210.10(g), require substitutions or modifications in the National School Lunch Program and School Breakfast Program for children whose disabilities restrict their diets.

### Accommodating Children With a Disability

An individual with a disability is defined as any person who has a physical or mental impairment that substantially limits one or more major life activities or is regarded as having such an impairment. Major life activities include caring for one's self, eating, performing manual tasks, walking, seeing, hearing, speaking, breathing, learning, and working.

The ADAAA has amended the definition of the term "disability," broadening it to cover additional individuals. The list of major life activities has also been expanded to add a new category called major bodily functions. These include: functions of the immune system, normal cell growth, along with digestive, bowel, bladder, neurological, brain, respiratory, circulatory, cardiovascular, endocrine, and reproductive functions.

The Agency must provide food substitutions to a child with a disability when the need for a substitution is supported by a written medical statement or completed Medical Statement form that is signed by a **licensed physician**.

Either medical statement must clearly identify the child's:

- Disability
- Major life activity or bodily function affected by the disability
- Diet prescription
- Food or foods to be omitted from his or her diet
- Food or choice of foods that must be substituted in his or her meals

The Agency is **required** to make dietary accommodations, including texture modifications (such as preparing chopped, ground, or pureed foods), when a physician provides a medical statement to the Agency for children whose disability restricts their diet.

### Accommodating Children Without a Disability

As defined in 7 *CFR* Section 15(b), an individual who does not have a disability, but is unable to consume a particular food because of a medical or other special dietary condition, is considered to have a **special dietary need**.

Agencies have the **option** of making dietary accommodations for children who do not have a disability but are medically certified as having a medical or dietary need. It is important to note that the Agency can make accommodations for children with special dietary needs on a case-by-case basis. However, the Agency must ensure that the accommodation is supported by a written medical statement or completed Medical Statement form signed by a recognized medical authority; **a licensed physician, a physician's assistant, or a nurse practitioner**.

The medical statement must clearly identify the child's:

- Medical or other special dietary condition
- Diet accommodation requested
- Food or foods to be omitted from his or her diet
- Food or choice of foods that must be substituted in his or her meals

### Written Medical Statement to Request Special Meals and/or Accommodations

The USDA **requires** that a written medical statement be completed to ensure that a child's modified meal is reimbursable and that any meal modifications meet nutrition standards that are medically appropriate. The California Department of Education (CDE) developed a Medical Statement to Request Special Meals and/or Accommodations form to identify the information required to implement a sound nutrition plan for children with dietary restrictions. The Medical Statement form is available on the CDE SNP Forms Web page at <http://www.cde.ca.gov/ls/nu/sn/fm.asp>, the CDE CACFP Forms Web page at <http://www.cde.ca.gov/ls/nu/cc/fm.asp>, and the CDE SFSP Forms Web page at <http://www.cde.ca.gov/ls/nu/sf/fm.asp>.

A written medical statement or Medical Statement form must be signed by the appropriate recognized medical authority. It is important that Agencies reiterate to the child's family that the written medical statement needs to contain the most current diet order from the child's recognized medical authority. This will protect the Agency from liability and minimize misunderstandings with households.

Under no circumstance is an Agency to revise or change a recognized medical authority's diet prescription or medical order.

### Individualized Education Plan to Request Special Meals and/or Accommodations

An IEP is a plan or program developed in accordance with the Individuals with Disabilities Education Act to ensure that a child who has a disability receives specialized instruction and related services.

When specialized nutrition services are required, a written medical statement or completed Medical Statement form that is signed by a licensed physician must support the child's IEP. An IEP does not supersede the licensed physician's written medical statement. It supports the written medical statement to reiterate the child's nutritional needs.

### Definition of a Recognized Medical Authority

For a child with a medical condition that has been determined to be a **disability**, the CDE will continue to comply with the USDA guidelines already in place that define a recognized medical authority as a **licensed physician**.

The CDE has revised the definition of recognized medical authority when diagnosing a child, who does not have any disabilities, with a **special dietary need**.

The California Department of Consumer Affairs, Board of Registered Nursing, has determined that it is not in the scope of practice for a Registered Nurse (RN) to establish a medical diagnosis and/or prescribe dietary orders. The CDE's Nutrition Services Division will abide with USDA guidelines already in place that define a recognized medical authority as a **licensed physician, physician assistant, or nurse practitioner** for children who are not disabled but have a special dietary need. No other medical authorities are authorized to sign a medical statement to determine a child's meal order. This guideline assures the safety and well-being of all parties involved.

**Agencies that currently have written medical statements on file that are signed by an RN will not need to update those statements. However, from the date this MB is issued, a recognized medical authority as defined above is required to sign all medical statements.**

## The New Meal Patterns and Children with Special Dietary Needs

Meals for children with recognized medical disabilities that restrict their diet are not affected by the new 2012 Food-Based Menu Plan (meal pattern) or dietary specifications. Meals will continue to be based on a written medical statement or completed Medical Statement form that is signed by a licensed physician. Optional accommodations for children with special dietary needs must be consistent with the new meal pattern and dietary specifications.

## Food Allergies

Generally, children with food allergies or intolerances do not have a disability as defined under Section 504 of the Rehabilitation Act and the Individuals with Disabilities Education Act, Part B. The Agency may, but is not required to, make food accommodations for these children.

When food allergies result in a severe, life-threatening reaction, a child's condition would rise to the level of a disability. The Agency is **required** to accommodate the prescribed diet ordered by a licensed physician.

## Funding Sources

In most cases, children with disabilities are accommodated with little extra expense or involvement. Agencies may not charge children with disabilities or certified special dietary needs who require food substitutions or accommodations more than they charge other children for program meals or snacks.

An Agency's General Fund and other funding sources may be used to cover the additional costs. For more information on additional funding sources, please refer to pages 11–14 in the USDA *Accommodating Children with Special Dietary Needs in the School Nutrition Programs* guidance manual. The manual is available to download from the USDA School Meal Guidance and Resources Web page at <http://www.fns.usda.gov/school-meals/guidance-and-resources>.

## Contact Information

If you have any questions regarding this MB, please contact Lori Porter, Child Nutrition Consultant (CNC), Southern SNP Unit, by e-mail at [lporter@cde.ca.gov](mailto:lporter@cde.ca.gov) or by phone at 916-322-1454, or Stephanie Enright, CNC, Northern SNP Unit, by e-mail at [senright@cde.ca.gov](mailto:senright@cde.ca.gov) or by phone at 916-323-0122.

**Questions: Nutrition Services Division | 800-952-5609**

Last Reviewed: Wednesday, June 18, 2014



United States  
Department of  
Agriculture

Food and  
Nutrition  
Service

3101 Park  
Center Drive  
Alexandria, VA  
22302-1500

DATE: April 26, 2013

MEMO CODE: SP 36-2013, CACFP 10-2013, SFSP 12-2013

SUBJECT: Guidance Related to the ADA Amendments Act

TO: Regional Directors  
Special Nutrition Programs  
All Regions

State Directors  
Child Nutrition Programs  
All States

The purpose of this memorandum is to provide schools, institutions, facilities, sites, and sponsors participating in the Child Nutrition Programs (CNP) with additional clarifications on making dietary accommodations for children with disabilities as required under Section 9(a) of the Richard B. Russell National School Lunch Act, 42 USC 1758(a), CNP regulations and in accordance with the Americans with Disabilities Act Amendments Act of 2008 (ADAAA), P.L. 110-325. The ADAAA, as explained in further detail in the next paragraph below, amended the Federal definition of disability, broadening it to cover additional individuals. Because of this broader definition, it is reasonable that CNP operators may see more children identified by their licensed physician as having a food-related disability than were identified previously. Program operators should note, however, that the process for identifying children with disabilities requiring an accommodation has not changed. The CNPs continue to require that participants seeking an accommodation for a disability that is food-related must provide a statement from a licensed physician (as defined by the State) identifying the food-related disability and indicating the required meal accommodation.

The ADAAA broadened the list of “Major Life Activities” for purposes of identifying individuals with disabilities and added a new category called “Major Bodily Functions”, 42 USC 12102(2)(B). This law continues to include as “Major Life Activities”: “caring for oneself, performing manual tasks, seeing, hearing, eating, sleeping, walking, standing, lifting, bending, speaking, breathing, learning, reading, concentrating, thinking, communicating and working.” As amended by the ADAAA, Major Life Activities now also includes “Major Bodily Functions” such as: “functions of the immune system, normal cell growth, digestive, bowel, bladder, neurological, brain, respiratory, circulatory, cardiovascular, endocrine, and reproductive functions.” It is important to point out that individuals who take mitigating measures to improve or control any of the conditions recognized as a disability, are still considered to have a disability and require an accommodation.

Regional Directors

State Directors

Page 2

The Food and Nutrition Service is working to update the guidance, *Accommodating Children with Special Dietary Needs in the School Nutrition Programs, Guidance for School Food Service Staff* ( [http://www.fns.usda.gov/cnd/guidance/special\\_dietary\\_needs.pdf](http://www.fns.usda.gov/cnd/guidance/special_dietary_needs.pdf)), to reflect the broadened definition of disabilities. Institutions participating in the CACFP and SFSP should also refer to this resource until more specific guidance is made available. State agencies are reminded to distribute this information to Program operators immediately. Program operators should direct any questions regarding this memorandum to the appropriate State agency. State agency contact information is available at <http://www.fns.usda.gov/cnd/Contacts/StateDirectory.htm>. State agencies should direct questions to the appropriate FNS Regional Office.

**Original Signed**

Melissa Rothstein

Acting Director

Child Nutrition Division

**MEDICAL STATEMENT TO REQUEST  
SPECIAL MEALS AND/OR ACCOMMODATIONS**

1. School/Agency Name		2. Site Name		3. Site Telephone Number											
4. Name of Participant				5. Age or Date of Birth											
6. Name of Parent or Guardian				7. Telephone Number											
8. Check One: <input type="checkbox"/> Participant has a disability or a medical condition and <i>requires</i> a special meal or accommodation. (Refer to definitions on reverse side of this form.) Schools and agencies participating in federal nutrition programs must comply with requests for special meals and any adaptive equipment. <b>A licensed physician must sign this form.</b>  <input type="checkbox"/> Participant does not have a disability, but is requesting a special meal or accommodation due to food intolerance(s) or other medical reasons. Food preferences are not an appropriate use of this form. Schools and agencies participating in federal nutrition programs are encouraged to accommodate reasonable requests. <b>A licensed physician, physician's assistant, or nurse practitioner must sign this form.</b>															
9. Disability or medical condition requiring a special meal or accommodation:															
10. If participant has a disability, provide a brief description of participant's major life activity affected by the disability:															
11. Diet prescription and/or accommodation: <i>(please describe in detail to ensure proper implementation-use extra pages as needed)</i>															
12. Indicate texture: <input type="checkbox"/> Regular <input type="checkbox"/> Chopped <input type="checkbox"/> Ground <input type="checkbox"/> Pureed															
13. Foods to be omitted and substitutions: <i>(please list specific foods to be omitted and suggested substitutions. you may attach a sheet with additional information as needed)</i>  <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; text-align: center;"><b>A. Foods To Be Omitted</b></td> <td style="width: 50%; text-align: center;"><b>B. Suggested Substitutions</b></td> </tr> <tr> <td>_____</td> <td>_____</td> </tr> <tr> <td>_____</td> <td>_____</td> </tr> <tr> <td>_____</td> <td>_____</td> </tr> <tr> <td>_____</td> <td>_____</td> </tr> </table>						<b>A. Foods To Be Omitted</b>	<b>B. Suggested Substitutions</b>	_____	_____	_____	_____	_____	_____	_____	_____
<b>A. Foods To Be Omitted</b>	<b>B. Suggested Substitutions</b>														
_____	_____														
_____	_____														
_____	_____														
_____	_____														
14. Adaptive Equipment:															
15. Signature of Preparer*		16. Printed Name		17. Telephone Number											
19. Signature of Medical Authority*		20. Printed Name		21. Telephone Number											
				22. Date											

\* Physician's signature is required for participants with a disability. For participants without a disability, a licensed physician, physician's assistant, or nurse practitioner must sign the form.

The information on this form should be updated to reflect the current medical and/or nutritional needs of the participant.

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## MEDICAL STATEMENT TO REQUEST SPECIAL MEALS AND/OR ACCOMMODATIONS

### INSTRUCTIONS

1. **School/Agency:** Print the name of the school or agency that is providing the form to the parent.
2. **Site:** Print the name of the site where meals will be served (e.g., school site, child care center, community center, etc.)
3. **Site Telephone Number:** Print the telephone number of site where meal will be served. See #2.
4. **Name of Participant:** Print the name of the child or adult participant to whom the information pertains.
5. **Age of Participant:** Print the age of the participant. For infants, please use Date of Birth.
6. **Name of Parent or Guardian:** Print the name of the person requesting the participant's medical statement.
7. **Telephone Number:** Print the telephone number of parent or guardian.
8. **Check One:** Check (✓) a box to indicate whether participant has a disability or does not have a disability.
9. **Disability or Medical Condition Requiring a Special Meal or Accommodation:** Describe the medical condition that requires a special meal or accommodation (e.g., juvenile diabetes, allergy to peanuts, etc.)
10. **If Participant has a Disability, Provide a Brief Description of Participant's Major Life Activity Affected by the Disability:** Describe how physical or medical condition affects disability. For example: "Allergy to peanuts causes a life-threatening reaction."
11. **Diet Prescription and/or Accommodation:** Describe a specific diet or accommodation that has been prescribed by a physician, or describe diet modification requested for a non-disabling condition. For example: "All foods must be either in liquid or pureed form. Participant cannot consume any solid foods."
12. **Indicate Texture:** Check (✓) a box to indicate the type of texture of food that is required. If the participant does not need any modification, check "Regular".
13. **A. Foods to Be Omitted:** List specific foods that must be omitted. For example, "exclude fluid milk."  
**B. Suggested Substitutions:** List specific foods to include in the diet. For example, "calcium fortified juice."
14. **Adaptive Equipment:** Describe specific equipment required to assist the participant with dining. (Examples may include a sippy cup, a large handled spoon, wheel-chair accessible furniture, etc.)
15. **Signature of Preparer:** Signature of person completing form.
16. **Printed Name:** Print name of person completing form.
17. **Telephone Number:** Telephone number of person completing form.
18. **Date:** Date preparer signed form.
19. **Signature of Medical Authority:** Signature of medical authority requesting the special meal or accommodation.
20. **Printed Name:** Print name of medical authority.
21. **Telephone Number:** Telephone number of medical authority.
22. **Date:** Date medical authority signed form.

### DEFINITIONS\*:

**"A Person with a Disability"** is defined as any person who has a physical or mental impairment which substantially limits one or more major life activities, has a record of such impairment, or is regarded as having such an impairment.

**"Physical or mental impairment"** means (a) any physiological disorder or condition, cosmetic disfigurement, or anatomical loss affecting one or more of the following body systems: neurological; musculoskeletal; special sense organs; respiratory, including speech organs; cardiovascular; reproductive, digestive, genito-urinary; hemic and lymphatic; skin; and endocrine; or (b) any mental or psychological disorder, such as mental retardation, organic brain syndrome, emotional or mental illness, and specific learning disabilities.

**"Major life activities"** include, but are not limited to, caring for oneself, performing manual tasks, seeing, hearing, eating, sleeping, walking, standing, lifting, bending, speaking, breathing, learning, reading, concentrating, thinking, communicating, and working.

**"Has a record of such an impairment"** is defined as having a history of, or have been classified (or misclassified) as having a mental or physical impairment that substantially limits one or more major life activities.

(\*Citations from Section 504 of the Rehabilitation Act of 1973 and Americans with Disabilities Act of 1990)



# FOOD ALLERGY STANDARD OPERATING PROCEDURES

## Serving Safe Food to Students with Food Allergies

**PURPOSE:** To serve safe and nutritious meals to students with food allergies.

**SCOPE:** This procedure applies to child nutrition employees involved in preparing and serving food to students with food allergies.

**KEY WORDS:** Allergies, Cleaning, Cross-contact, Hand washing.

### INSTRUCTIONS:

1. Follow policies and procedures of your child nutrition operation and school district.
2. Use your receiving procedures.
  - Check all ingredient labels each time a food is purchased.
  - Date each food item when received.
3. Store food items that contain allergens in a separate location from the non-allergenic items.
4. Keep ingredient labels for a minimum of 24 hours after serving the product.
5. Prevent cross-contact during food preparation.
  - Wash hands before preparing foods.
  - Wear single-use gloves.
  - Use a clean apron when preparing allergen-free food.
  - Wash, rinse, and sanitize all cookware before and after each use.
  - Wash, rinse, and sanitize food contact surfaces.
  - Designate an allergy-free zone in the kitchen. When working with multiple food allergies, set up procedures to prevent cross-contact within the allergy-free zone.
  - Prepare food items that do not contain allergens first. Label and store the allergen-free items separately.
  - Use a clean, sanitized cutting board when preparing food.
  - Use clean potholders and oven mitts for allergen-free foods to prevent cross-contact.
6. Prevent cross-contact during meal service.
  - Set aside food for students with food allergies from self-service food areas, such as salad bars, before the food is set out.
  - Use dedicated serving utensils and gloves for allergen-free foods.
  - Label items on the serving line correctly and clearly so that items containing food allergens are easily recognizable.
  - Ensure that tables and chairs are cleaned and sanitized before and after each meal and when needed.
7. Follow your school's procedures for identifying students with food allergies.

### MONITORING:

A child nutrition employee continually monitors receiving, preparation, and serving areas to assess whether food allergy procedures are being followed.



# FOOD ALLERGY STANDARD OPERATING PROCEDURES

## CORRECTIVE ACTION:

1. Retrain any child nutrition employee found not following the procedures in this SOP.
2. Refrain from serving any food to a student with a food allergy if there is any question as to whether or not an allergen might be present in that particular food.
3. Activate the school emergency action plan immediately if a student with the potential for anaphylaxis consumes a food allergen.

## VERIFICATION AND RECORD KEEPING:

The school nutrition manager will observe school nutrition staff to make sure they are following these procedures and are taking all necessary corrective actions. Keep a list of corrective actions taken.

**DATE IMPLEMENTED:** \_\_\_\_\_ **BY:** \_\_\_\_\_

**DATE REVIEWED:** \_\_\_\_\_ **BY:** \_\_\_\_\_

**DATE REVISED:** \_\_\_\_\_ **BY:** \_\_\_\_\_

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## Labeling Activity



Identify the unlabeled white powders in the numbered bags based on the list provided below:

White Powder Choices:

Abrasive sink cleaner  
All-purpose flour  
Baking soda  
Baking powder  
Coffee creamer

Corn starch  
Dry-carpet cleaner  
Granulated sugar  
Laundry detergent  
Pancake mix

Powdered lemonade mix  
Powdered sugar  
Salt  
Sanitizer  
Vanilla pudding mix

1. \_\_\_\_\_

6. \_\_\_\_\_

2. \_\_\_\_\_

7. \_\_\_\_\_

3. \_\_\_\_\_

8. \_\_\_\_\_

4. \_\_\_\_\_

9. \_\_\_\_\_

5. \_\_\_\_\_

10. \_\_\_\_\_

Why is it important to label everything in the kitchen?

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What labeling system is in place in your facility's kitchen?

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**Cross-Contamination Activity**

Dip a piece of your sponge once into the chicken blood (paint). Dot the sponge on the paper until you can no longer see any marks.

How many dots did you get? \_\_\_\_\_

Explain what this demonstrates to you.

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List five places in your kitchen where cross-contamination can occur:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

What are some strategies that can be used in your kitchen to prevent cross-contamination?

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### Clean Your Hands



#### Activity:

1. Get a small amount of Glo Germ and rub it evenly on your hands and wrists.
2. Wash your hands like you normally would.
3. Use a black light to highlight your handwashing skills.

List 3 areas of your hands that you should pay close attention to when washing your hands.

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

Why is it important to make sure your hands are properly washed?

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What are some strategies that can be used in your kitchen to ensure that everyone is practicing good handwashing?

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### Know Your Sanitizing Solution



#### Activity:

Each of the three containers has different amounts of sanitizing solution in them. One has the correct amount.

1. Using a different piece of test strip for each container, dip a test strip into each container (A,B,C).
2. Tape the three strips in the boxes below. List the PPM for each test strip and circle the one that has the correct amount of solution for sanitizing dishes.

A	B	C
PPM:	PPM:	PPM:

Why is it important to have the correct sanitizer concentration?

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**Times, Terms, and Temperatures to Remember**

Directions: Write a short answer describing the time, term, or temperature in the space provided.

1. 41 degrees to 135 degrees F \_\_\_\_\_
2. 4.6 to 7.5 \_\_\_\_\_
3. 0 degrees F to 220 degrees F \_\_\_\_\_
4. Twenty seconds \_\_\_\_\_
5. 41 degrees F \_\_\_\_\_
6. 50% to 60% \_\_\_\_\_
7. 50 degrees F to 70 degrees F \_\_\_\_\_
8. Six inches \_\_\_\_\_
9. 165 degrees for 15 seconds \_\_\_\_\_
10. 155 degrees for 15 seconds \_\_\_\_\_
11. 145 degrees for 15 seconds \_\_\_\_\_
12. 130 degrees for 112 minutes \_\_\_\_\_
13. 135 degrees \_\_\_\_\_
14. 180 degrees \_\_\_\_\_

15. 170 degrees for 30 seconds \_\_\_\_\_
16. MSDS \_\_\_\_\_
17. HACCP \_\_\_\_\_
18. FIFO \_\_\_\_\_
19. CCP \_\_\_\_\_
20. FATTOM \_\_\_\_\_
21. 55 degrees to 120 degrees \_\_\_\_\_
22. Cross connection \_\_\_\_\_
23. Cross-contamination \_\_\_\_\_
24. IPM \_\_\_\_\_
25. Vacuum Breaker \_\_\_\_\_
26. Pasteurization \_\_\_\_\_
27. Ultra Pasteurized \_\_\_\_\_
28. Hermetically Sealed \_\_\_\_\_
29. Sanitizer \_\_\_\_\_
30. Infection \_\_\_\_\_



31. Intoxication

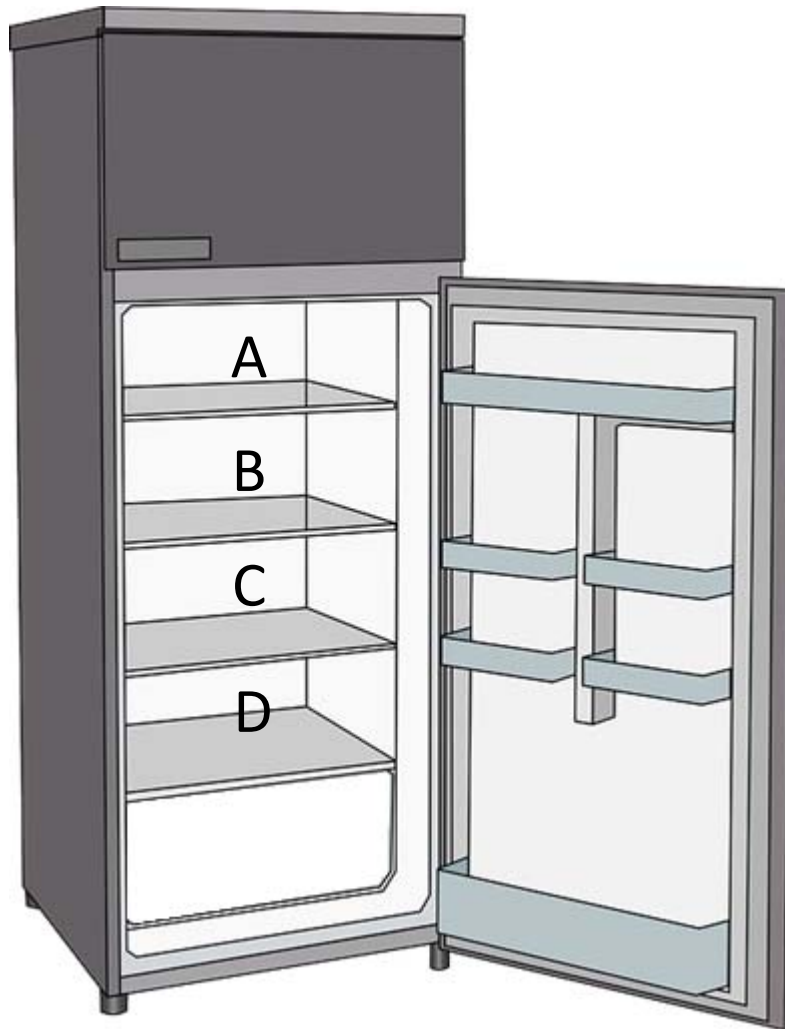
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32. Irradiation

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**Food Storage Safety**

You just received your delivery; write in the space provided next to each item which shelf it belongs on (one item per shelf) in the refrigerator. Be sure to have the correct order from top to bottom.



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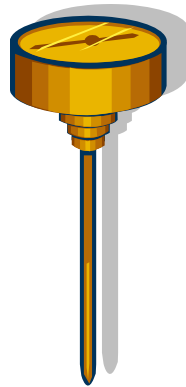


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## Check the Temp



Select one thermometer from the table and calibrate it following the instructions provided.

### How to Calibrate a Thermometer: Ice Point Method

- Fill a large glass with crushed ice. Add clean tap water until the glass is full and stir well.
- Put the thermometer stem or probe in the ice water mixture so that the entire sensing area is submerged. Do not let stem of the thermometer or probe touch the sides or bottom of the glass. Wait at least 30 seconds or until indicator stops moving.
- With the stem of the thermometer or probe still in the ice water mixture, use a wrench to turn the adjusting nut until the thermometer reads 32° (0°C). If calibrating a digital thermometer, press the retest button to automatically calibrate the thermometer.

Why is it important to calibrate thermometers regularly?

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When should a thermometer be calibrated?

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### Allergies and Food Labels Activity

This activity will use food labels you may have seen in the kitchen before. Using the label provided to you, answer each one of the questions below.

1. What is the name of the product you are checking for allergens?
2. Before you look at the label, what allergens would you expect this product to have?
3. Now, looking at the packaging, are any of the eight common allergens listed in the ingredient list? If yes, what are they?
4. Do the allergens listed match up with what you expected them to be?
5. Now look to see if the allergens are listed separately. If they are, do the listed allergens match up with what you found in the ingredient list? What are the allergens listed separately from the ingredient list?
6. Does the label list any information about being manufactured on shared equipment? If yes, what might the product contain in addition to the allergens you already found?
7. Did this product have any unexpected allergens in it? If yes, what were they?

### Allergy Recipe Activity

On the recipe below, identify the following:

1. Common allergens
2. Ingredients that may contain hidden allergens
3. Whether or not an ingredient or direction has the potential for cross contact.
4. Whether or not a recipe step has the potential for cross contact.

#### Breakfast Burrito

Ingredients	Weight or Measure (50 servings)	Common Allergen? (Yes or No)	Hidden Allergen? (Yes or No)	Cross Contact Risk? (Yes or No, and Why)
Fresh large eggs	45 each			
Frozen whole-kernel corn	1 lb			
Low fat 1% milk	$\frac{3}{4}$ cup			
Fresh green peppers, diced	8 oz			
Fresh onions, diced	14 oz			
Fresh tomatoes diced	2 oz			
Yellow mustard	$\frac{1}{4}$ c			
Hot pepper sauce	1 Tbsp			
Salt	2 tsp			
Reduced fat cheddar cheese	10 oz			
Flour tortillas	50 each			

Directions	Cross Contact Risk? (Yes or No, and Why)
In a mixer, using the paddle attachment, blend eggs, corn, milk, green peppers, onions, tomatoes, prepared mustard, hot pepper sauce, and salt.	
Pour 1 gal 2 cups of the above egg mixture into each steamtable pan (12" x 20" x 2 ½"), which has been lightly coated with pan release spray. For 50 servings, use 2 pans. Cover with foil or metal lid.	
Bake: Conventional oven: 350° F for 60 minutes. Convection oven: 325° F for 50 minutes. Steamer: 30 minutes. CCP: Heat to 145° F or higher for 3 minutes.	
Sprinkle 5 oz. (1 ¼ cups) cheese on top of each pan. Cut each pan 5 x 5 (25 portions per pan).	
Place one portion in center of each tortilla. Fold from bottom first, sides second, and top third, like an envelope. Place 25 tortillas flap side down into each steamtable pan (12" x 20" x 2 ½"). For 50 servings, use 2 pans.	
Heat: Compartment steamer: for 2-3 minutes. Conventional oven: 300° F for 3 minutes covered with a clean damp cloth. Convection oven: 300° F for 3 minutes covered with a clean damp cloth.	
CCP: Hold for hot service at 135° F or higher.	

## Lesson 1 Worksheet: Answer Key

Matching: *Draw a line from the definition to the correct word.*

<u>Definition</u>	<u>Word</u>
1. The safeguarding of food from anything that could harm the health of consumers (C)	A. Potentially hazardous foods (PHF)
2. A sickness that is caused by eating a contaminated food or drinking a contaminated beverage (G)	B. Temperature abuse
3. An incidence in which two or more people become sick and have the same symptoms after eating a common food; this is confirmed when a laboratory analysis shows the source of a sickness to be a specific food (E)	C. Food safety
4. A disease-producing microorganism (H)	D. Sanitary
5. An undesirable, non-food item present in food or water; examples include dirt, hair, broken glass, metal fragments, and bits of packaging materials (F)	E. Foodborne outbreak
6. Foods that support the growth of microorganisms (A)	F. Physical contaminant
7. Free of harmful levels of pathogens (D)	G. Foodborne illness
8. Holding foods in the temperature danger zone (at unsafe temperatures), which allows bacterial growth, or not cooking or reheating foods properly to destroy harmful microorganisms (B)	H. Pathogen

9. Why is foodborne illness a serious issue?

- *People eat food prepared out of the home*
- *More hands are involved in preparing food*
- *When people handle food, the chance of food contamination increases*
- *Food establishments serve "at risk" people*

10. Why is foodborne illness more serious than it was in the past?

- *Pathogens are harder to control*
- *More food is being produced in fewer manufacturing plants*
- *Food imports are on the rise*

11. Why is there a need to study sanitation and safety?

- *Customer protection*
- *Employee protection*
- *Legal requirement*
- *Good business practice*
- *Pride in the workplace*

12. The temperature danger zone is between 41 °F and 135 °F. Food becomes unsafe after *four* hours in the temperature danger zone.

13. Name the three basics food safety hazards:

- 1) *Biological contaminants*
- 2) *Chemical contaminants*
- 3) *Physical contaminants*



14. The essential rules of food safety are:

- 1) *Clean*
- 2) *Separate*
- 3) *Cook*
- 4) *Chill*

15. What is the number one thing a child nutrition employee can do to curb the spread of foodborne illness?

- *Proper personal hygiene, including proper handwashing procedures*

16. Name the three most common factors responsible for causing foodborne illness:

- 1) *Time and temperature abuse*
- 2) *Cross-contamination*
- 3) *Poor personal hygiene*

## Lesson 2 Worksheet: Answer Key

*Match the definition to the correct word.*

<u>Definition</u>		<u>Word</u>
1. A measurement on a pH scale ranging from 0 (very acid) to 14.0 (very alkaline or basic), with 7.0 being neutral	<u>  G  </u>	A. Cross-contamination
2. Microorganisms that must have oxygen in order to grow	<u>  D  </u>	B. Bacteria
3. Microorganisms that cannot survive when oxygen is present	<u>  I  </u>	C. Food contamination
4. Living, microscopic, single-celled organisms that are involved in fermenting and spoiling foods which often cause disease	<u>  B  </u>	D. Aerobic microorganisms
5. The transfer of harmful microorganisms (pathogens) or other harmful substances from one food, water, or non-food item to another	<u>  A  </u>	E. Fungi
6. Microorganisms that can grow with or without oxygen, but have a preference for without; most pathogens are these	<u>  H  </u>	F. Food spoilage
7. Exposure of a food to a pathogen, or chemical or physical hazard; not usually detectable by sight, smell, or taste	<u>  C  </u>	G. Acidity
8. Damage to the edible quality of food, which may or may not lead to foodborne illness; often easily detectable by sight, smell, or taste	<u>  F  </u>	H. Facultative anaerobic microorganisms
9. Organisms that range from single-celled, microscopic organisms, such as yeasts and molds to multicellular organisms, such as mushrooms	<u>  E  </u>	I. Anaerobic microorganisms

Match the definition to the correct word.

- |  |              |  |
|--|--------------|--|
| 10. A sealed package in which the oxygen has been reduced or replaced with other gases, such as nitrogen and carbon dioxide  | <u>  N  </u> | J. Parasite                            |
| 11. Microscopic organisms  | <u>  K  </u> | K. Microorganisms                      |
| 12. A fungus that produces a furry growth on vegetable or animal matter exposed to damp conditions                           | <u>  O  </u> | L. pH                                  |
| 13. An organism that lives on or in, and feeds off of, another living thing  | <u>  J  </u> | M. Sous-vide                           |
| 14. A symbol used to designate the acidity or alkalinity of a food   | <u>  L  </u> | N. Modified Atmosphere Packaging (MAP) |
| 15. A process by which raw ingredients, often entire recipes, are sealed in plastic pouches and then the air is vacuumed out | <u>  M  </u> | O. Mold                                |
- 16.
- A. *Food contamination* is exposure of a food to a pathogen, or chemical or physical hazard and is not usually detected by sight, smell, or taste.
  - B. *Food spoilage* is damage to the edible quality of food, which may or may not lead to foodborne illness and is often detected by sight, smell, or taste.
  - C. Foodborne *infection* is caused by eating food that contains a living, disease-causing microorganism (ex: *Listeria monocytogenes*, Hepatitis A, *Toxoplasma gondii*).
  - D. Foodborne *intoxication* is caused by eating food that contains a harmful chemical or toxin produced by bacteria or other source (ex: *Staphylococcus aureus*, *Clostridium botulinum*).
  - E. *Toxin-mediated infection* is caused by eating food that contains harmful microorganisms that will produce a toxin once inside the human body (ex: *E. coli* 0157:H7, *Clostridium botulinum*).

## 17. Factors Affecting the Growth of Microorganisms:

- 1) *Food*
- 2) *Acidity*
- 3) *Temperature*
- 4) *Time*
- 5) *Oxygen*
- 6) *Moisture*

18. *Cross - contamination* is when harmful microorganisms can be transferred from one item to another. Typically, microbes from a raw food are transferred to a cooked or ready-to-eat food by contaminated hands, equipment, or utensils.

- Explain the three ways cross-contamination may occur:

- 1) *Food to food* : Thawing beef is stored above an uncovered salad and drips into it
- 2) *Hand to food* : Food handler scratches body and then handles food with bare hands
- 3) *Equipment to food* : Meat slicer is used to slice raw meat and then to slice bologna for cold sandwiches without being washed

- The California Retail Food Code requires that employees wear *gloves* when contacting food or food-contact surfaces if they have cuts, sores, artificial nails, etc.

19. Which of the following does NOT explain why bacteria are the most common cause of foodborne disease in a food establishment?

- a) Under ideal conditions, bacteria can grow very rapidly.
- b) Bacteria are found naturally in many foods.
- c) Bacteria can be easily transferred from one food source to another.
- d) *Bacteria need a host to survive.***

20. Most bacteria that cause foodborne illness grow:

- a) With or without oxygen between 41°F and 135°F.
- b) Without oxygen between 41°F and 165°F.**
- c) With oxygen between 41°F and 135°F.
- d) With or without oxygen between 41°F and 165°F.

21. Which of the following organisms is most likely to cause foodborne illness in a food establishment?

- a) *Salmonella***
- b) *Cryptosporidium parvum*
- c) *Anasakis*
- d) *Trichanella spiralis*

22. Bacteria grow best within a narrow temperature range called the temperature danger zone. The temperature danger zone is between:

- a) 0 °F and 220 °F
- b) 32 °F and 135 °F
- c) 41 °F and 135 °F**
- d) 41 °F and 165 °F

23. Bacteria that cause foodborne illness will only grow on foods that have a pH range of \_\_\_\_ to \_\_\_\_.

- a) 3.2 to 9.0
- b) 4.6 to 7.0**
- c) 5.0 to 7.0
- d) 7.0 to 9.0

24. Bacteria that cause foodborne illness will only grow on foods that have a water activity (Aw) above \_\_\_\_.

- a) 0.85**
- b) 0.70
- c) 0.46
- d) 0.10

25. Why do some bacteria form spores?

- a) To reproduce
- b) To move more easily from one location to another
- c) To survive adverse environmental conditions**
- d) To survive without oxygen

26. Which of the following is NOT considered a potentially hazardous food?

- a) Red meat
- b) Fish and shellfish
- c) Poultry and eggs
- d) Dried rice**

27. The most effective way to control the growth of bacteria in a food establishment is to control:

- a) Time and temperature**
- b) Oxygen and pH conditions
- c) Temperature and water activity
- d) Water activity and food availability

### Lesson 3 Worksheet: Answer Key

Matching: *Draw a line from the definition to the correct word.*

<u>Definition</u>	<u>Word</u>
1. Free of dirt, food particles, or other visible soil (C)	A. Potable water
2. Water that is safe to drink (A)	B. Sanitize
3. Free of harmful levels of pathogens (D)	C. Clean
4. To treat a surface that has been cleaned to reduce the number of disease-causing microorganisms to safe levels (B)	D. Sanitary
5. The physical removal of dirt, food residues, and other visible soil (F)	E. Rinsing
6. The removal of cleaners (E)	F. Washing
7. The two methods of equipment sanitation are:	
I. <i>Heat</i>	
II. <i>Chemical</i>	
8. The California Retail Food Code specifies that food contact surfaces of equipment and utensils used with potentially hazardous food be cleaned at least every <i>four</i> hours when in constant use.	
9. What are the proper steps in the manual dishwashing operation after scraping and pre-rinsing?	
a) Wash, rinse, sanitize, and towel dry	
b) Rinse, wash, sanitize, and air dry	
<b>c) Wash, rinse, sanitize, and air dry</b>	
d) Rinse, wash, sanitize, and towel dry	

10. When sanitizing with hot water in manual dishwashing, what should the temperature of the water in the final rinse be?

- a) 140° F
- b) 171° F**
- c) 194° F
- d) 212° F

11. Which of the following statements is **false**?

- a) In manual heat sanitizing, dishes must be immersed in water at 171 °F or above for at least 30 seconds.
- b) Pre-scrapping helps remove food from dishes, which helps the wash water clean the dishes.
- c) Iodine is less corrosive than chlorine.
- d) *Sanitizing is a process that removes soil and prevents accumulation of food residues on equipment, utensils, and surfaces.***

12. The recommended water temperature range for sanitizing solutions is between \_\_\_\_ and \_\_\_\_.

- a) 55 °F and 120 °F
- b) 75 °F and 120 °F**
- c) 41 °F and 140 °F
- d) 140 °F and 171 °F

13. The strength of a chemical sanitizer in manual dishwashing must be checked often because...

- a) If the chemical is too strong, it ruins dishes.
- b) The chemical strength increases over time and leaves a toxic residue on equipment.
- c) *The strength of chemical sanitizers may drop off as pathogens are killed and the sanitizer is diluted with rinse water.***
- d) The chemical strength increases with time and could corrode the metal on equipment.

14. Which is not a recommended sanitizer for a food establishment?

- a) Chlorine
- b) Iodine
- c) Quaternary Ammonia Compounds
- d) *Ammonia***

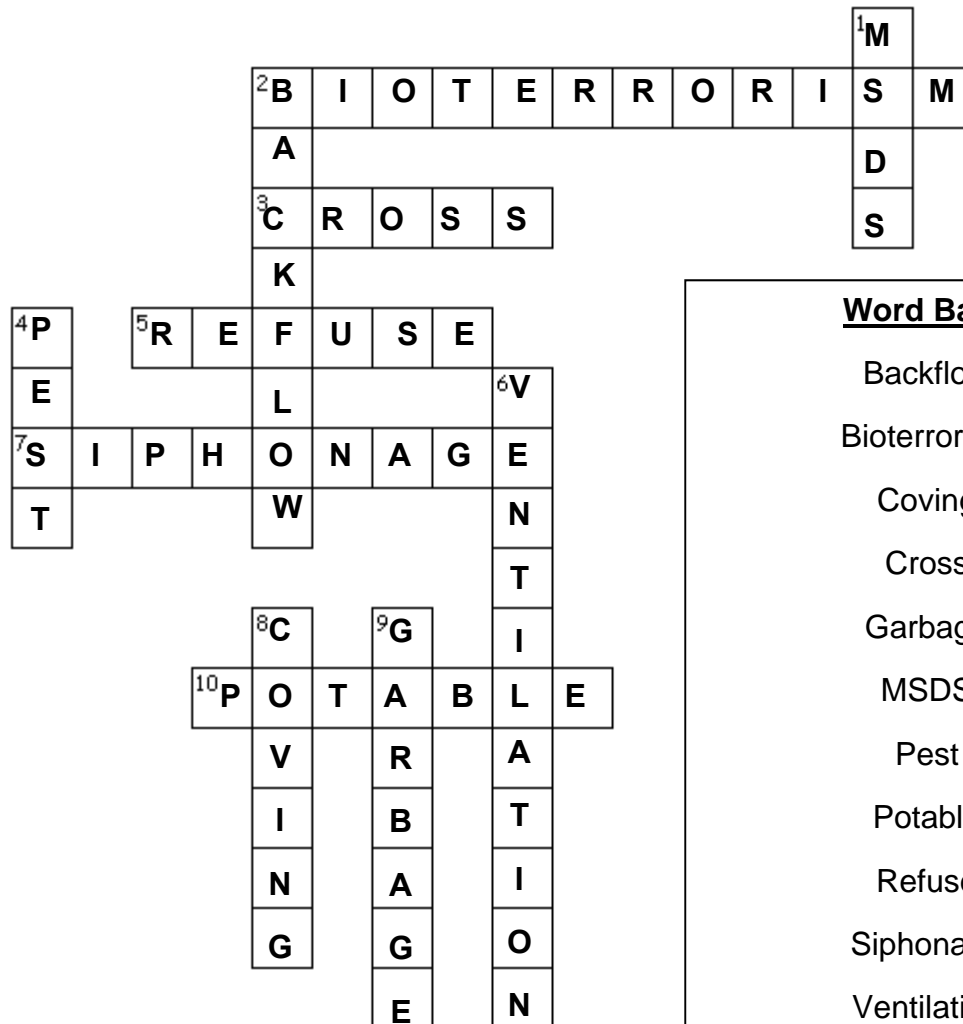


15. Which of the following statements is false?

- a) Keeping things clean is the responsibility of every person working in the food industry.
- b) *To be sanitary, a piece of equipment must be free of all pathogens.***
- c) Food service workers should not wear medical information jewelry while working with food.
- d) Food service workers should report any suspected foodborne illness to supervisors.

## Lesson 4 Worksheet: Answer Key

1. Directions: Complete the crossword by filling in a word that fits each clue.



### Word Bank

Backflow  
Bioterrorism  
Coving  
Cross  
Garbage  
MSDS  
Pest  
Potable  
Refuse  
Siphonage  
Ventilation

#### Across

2. When harmful microorganisms are purposely put into food, water, etc. in order to make people sick and die
3. \_\_\_\_\_ Connection: Any physical link through which contaminants from drains, sewers, or waste pipes can enter a potable water supply
5. Solid waste, which is not disposed of through the sewage system
7. Back \_\_\_\_\_: A type of backflow that occurs when a loss of pressure in the water supply causes dirty water or chemicals to be sucked back into the potable water supply.
10. Water that is safe to drink

#### Down

1. Material Safety Data Sheet, a summary of important information about a chemical provided by the manufacturer and which must be kept where employees can find it
2. A backward flow of contaminated water, caused by back pressure or back siphonage, into a potable water supply

- 4. A troublesome animal or insect that often carries disease or filth into the food service environment
- 6. A system of exhaust fans, hoods, and filters designed to remove steam, smoke grease, heat, and airborne contaminants from the air around food preparation areas and equipment
- 8. A curved, sealed 3/8 inch-edge between the wall and the floor
- 9. Waste that cannot be recycled

2. A good floor plan can:

- A. Promote *safety*
- B. Minimize *distances* traveled by employees
- C. Prevent *cross-contamination*

3. An *air gap* is the most dependable backflow prevention device.

4. Identify common pests found in the food service environment.

- I. *Cockroaches*
- II. *Rodents*
- III. *Flies*
- IV. *Moths and Beetles*

5. Circle one: Do or Do Not install insect control devices over food preparation areas or in close proximity to exposed food and/or food-contact surfaces!

6. Which of the following statements is FALSE?

- a) Toilet facilities must be available for all employees.
- b) Employee toilet facilities must be conveniently located and accessible during working hours.
- c) Separate toilet facilities should be provided for men and women.
- d) **Poor sanitation in toilet facilities will influence customer's opinions about cleanliness, but will not promote the spread of disease.**

7. The most effective device for protecting the potable water system from contamination by backflow is a (an)...
- a) **Air gap**
  - b) Double check valve
  - c) Reduced pressure backflow preventer
  - d) Vacuum breaker
8. For air gaps, the vertical distance from the supply pipe (faucet) to the flood rim must be at least:
- a) **Two times the diameter of the supply pipe, but never less than 1 inch.**
  - b) Two times the diameter of the supply pipe, but never less than 2 inches.
  - c) Three times the diameter of the supply pipe, but never less than 1 inch.
  - d) Four times the diameter of the supply pipe, but never less than 2 inches.
9. Which of the following statements is FALSE?
- a) Proper disposal and storage of garbage is needed to prevent food contamination and avoid pests.
  - b) A trash receptacle must be provided in each area of the establishment where refuse is generated.
  - c) Garbage receptacles must be durable, clean, nonabsorbent, leak-proof, and pest-proof.
  - d) **Trash may be stored outdoors in plastic bags provided the bags are stored at least 15 inches off the ground.**
10. Which one of the following situations requires corrective action?
- a) A trash can with the lid off while in use
  - b) **A handwashing station with a multi-use cloth towel for hand drying**
  - c) Light colored ceramic tile being used for the walls of the food preparation area
  - d) Anti-slip flooring provided in the dishwashing area
11. Back siphonage is likely to occur if:
- a) **The pressure in the potable water system drops below that of a non-potable or contaminated water source.**
  - b) Contamination is forced into a potable water system through a connection that has a higher pressure than the water system.
  - c) Pressure builds up in a sewer line due to blockage.
  - d) The water seal in a kitchen trap is siphoned out.

12. The primary responsibility of food establishment managers in pest control is to ensure that:

- a) ***Everyone in the facility practices good sanitation principles that will prevent contamination of food and water, and eliminate areas for pests to hide.***
- b) Pesticides are applied by licensed operators.
- c) The pest control operator they use employs integrated pest management.
- d) The garbage area is kept free of litter.

13. The best way to encourage employees to wash their hands when needed is to:

- a) Provide separate restrooms for employees and for customers.
- b) ***Provide handwashing stations near work areas.***
- c) Provide hand sanitizers instead of handwashing lavatories in food preparation areas.
- d) Put up a sign in the employee locker room reminding them of proper handwashing.

14. Coving is a (an):

- a) ***Curved sealed edge between the floor and wall that eliminates sharp corners to make cleaning easier.***
- b) Anti-slip floor covering used to protect workers from slips and falls.
- c) Plastic material used to seal cracks and crevices under and around equipment in a food establishment.
- d) Device used to prevent back siphonage.

## Lesson 5 Worksheet: Answer Key

*Match the definition to the correct word.*

<u>Definition</u>		<u>Word</u>
1. Clean, free of harmful microorganisms	<u>D</u>	A. Hazard
2. Monitoring cold storage units by placing thermometers in the warmest area (usually by the door) and the coldest area (usually in the back) and sometimes including a read-out panel outside the unit to check the inside temperature without opening the door	<u>G</u>	B. Control point
3. A point in the food flow that needs to be controlled so that biological, chemical, and physical contamination does not occur	<u>B</u>	C. Food Process Flow
4. An action taken if a critical limit is not met	<u>F</u>	D. Aseptic
5. A point during the food flow where hazards can be prevented, eliminated, or reduced to acceptable levels	<u>E</u>	E. Critical control point
6. The boundaries set to make sure that a possible hazard is prevented, eliminated, or reduced to an acceptable level	<u>H</u>	F. Corrective Action
7. The path that food follows from receiving through serving	<u>C</u>	G. Cold Storage units temperature monitoring
8. A danger that is likely to cause illness or injury if not controlled	<u>A</u>	H. Critical limits

Match the definition to the correct word.

- |   |              |  |
|---|--------------|--|
| 9. A food safety system that focuses on identifying hazards within the flow of food in a food service operation and developing procedures to reduce the risk of foodborne illness and outbreaks | <u>  J  </u> | I. Monitoring  |
| 10. Establishing a procedure to determine if the critical limit is being met  | <u>  I  </u> | J. Hazard Analysis and Critical Control Points (HAACP) |
| 11. A process, used most often with milk, that destroys all disease-causing microorganisms and reduces the total number of bacteria, thus increasing shelf life                                 | <u>  N  </u> | K. Time-temperature indicator (TTI)                    |
| 12. Contaminated or infected  | <u>  O  </u> | L. UHT milk  |
| 13. A strip of liquid crystals that changes color when packaged goods reach an unsafe temperature   | <u>  K  </u> | M. Verification  |
| 14. Milk pasteurized using ultra-high temperatures and packaged aseptically   | <u>  L  </u> | N. Pasteurization                                      |
| 15. Determines if established critical limits and corrective actions are preventing, eliminating, or reducing hazards to an acceptable level  | <u>  M  </u> | O. Septic  |

16. What does HACCP stand for?

*Hazard*

*Analysis and*

*Critical*

*Control*

*Points*

17. HACCP is a system to help prevent foodborne illness through...

- A. Proper *food* handling
- B. *Monitoring*
- C. *Recordkeeping*

The Seven HACCP Principles:

**1. Conduct a *hazard analysis***

**2. Determine the critical control points**

The most common critical control points are:

- A. *Cooking*
- B. *Cooling*
- C. *Reheating*
- D. *Hot/cold holding*

**3. Establish *critical limits***

**4. Establish *monitoring* procedures**

**5. Establish *corrective actions***

**6. Establish *verificiation* procedures**

**7. Establish *recordkeeping and documentation* procedures**



18. The eight steps of the food service process are:

1. *Purchasing*
2. *Receiving*
3. *Storing*
4. *Preparing*
5. *Cooking*
6. *Serving and holding*
7. *Cooling*
8. *Reheating*

19. The two most common food thermometer types are:

- I. *Bi-metallic stemmed thermometers*
- II. *Digital thermometers*

The two calibration methods are:

- I. *Ice-Point Method*
- II. *Boiling-Point Method*

20. The temperature of frozen food should be measured by...

- a) Inserting the sensing probe into the center of a package until the temperature stabilizes.
- b) *Inserting the sensing probe between two packages until the temperature stabilizes.***
- c) Measuring the ambient temperature of the frozen food compartment of the delivery vehicle.
- d) Looking for signs of freezing and thawing, such as large ice crystals or frozen juices in the box.

21. Frozen foods should not be accepted at a food establishment if...

- a) ***They have large ice crystals on the surface.***
- b) The package is intact.
- c) The temperature is below 32 °F.
- d) The temperature of the delivery truck is 32 °F.

22. Which practice requires corrective action?

- a) Products in the dry storage area are being rotated on a first-in, first-out stock basis.
- b) Foods stored in the walk-in freezer are stored on slatted shelves that are 6 inches above the floor.
- c) ***Raw beef is stored above salad in the refrigerator.***
- d) Pesticides are stored in a locked and labeled cabinet in the dry food storage area.

23. Which of the following is the preferred method for thawing potentially hazardous foods?

- a) In the microwave oven
- b) At room temperature
- c) ***In the refrigerator***
- d) On the counter

24. Hot foods should be held at \_\_\_\_\_ or above and cold foods should be held at \_\_\_\_\_ or below.

- a) 165 °F; 41 °F
- b) 165 °F; 32 °F
- c) ***135 °F; 41 °F***
- d) 135 °F; 32 °F

25. Poultry and stuffed meats should be cooked to an internal temperature of \_\_\_\_\_ for 15 seconds to be considered safe.

- a) 140 °F
- b) 145 °F
- c) 155 °F
- d) ***165 °F***

26. Ground beef should be cooked to an internal temperature of \_\_\_\_\_ for 15 seconds to be considered safe.

- a) 140 °F
- b) 145 °F
- c) 155 °F**
- d) 165 °F

27. Regardless of the type of food, all potentially hazardous foods that have been cooked and cooled need to be reheated to an internal temperature of \_\_\_\_\_ within 2 hours to be considered safe.

- a) 140 °F
- b) 145 °F
- c) 155 °F
- d) 165 °F**

28. All foods that are to be held cold must be held at \_\_\_\_\_ or below.

- a) 41 °F**
- b) 50 °F
- c) 70 °F
- d) 0 °F

29. The Hazard Analysis and Critical Control Points (HACCP) system should be employed...

- a) *Whenever potentially hazardous foods are prepared.***
- b) Only in institutional food facilities that provide food for very young or elderly consumers.
- c) Only in convenience stores where mechanical dishwashing equipment is not available.
- d) Only when foods are sold for consumption off site.

30. Which is an example of a critical control point?

- a) Poultry purchased from approved sources.
- b) *Chicken and noodles are heated on the stove until the center of the poultry reaches 165 °F for 15 seconds.***
- c) Only pasteurized milk is used by the school.
- d) The cutting board is washed and sanitized between chopping carrots and celery for the garden salad.

## **Supplemental Lesson Worksheet: Answer Key**

Match the definition to the correct word.

<b><u>Definition</u></b>		<b><u>Word</u></b>
1. A specific type of immune system response to a food	<u>  C  </u>	A. Immunoglobulin E (IgE)
2. A substance that causes an allergic reaction	<u>  I  </u>	B. Celiac disease
3. A protein in the body that reacts and attaches to specific substances	<u>  F  </u>	C. Food allergy
4. A protein or other substance that antibodies attach to	<u>  K  </u>	D. Anaphylaxis
5. A type of immune system cell found in body tissues	<u>  M  </u>	E. Basophils
6. A type of immune system cell found in blood	<u>  E  </u>	F. Antibodies
7. A type of antibody found on basophils and mast cells	<u>  A  </u>	G. Cross-contact
8. A severe allergic reaction that results in a drop in blood pressure and difficulty breathing	<u>  D  </u>	H. Medical Statement to Request Special Meals and/or Accommodations
9. A sensitivity to a food that does not involve IgE	<u>  L  </u>	I. Allergen
10. A immune system reaction to gluten that causes damage to the lining of the intestine	<u>  B  </u>	J. Lactose intolerance
11. Inability to digest lactose	<u>  J  </u>	K. Antigen
12. Required form when meal accommodations are made to insure they are reimbursable	<u>  H  </u>	L. Food intolerance
13. When allergens from a food are transferred to another food	<u>  G  </u>	M. Mast cells

14. *Anaphylaxis* is the most dangerous food allergy reaction, because it can result in death if not treated quickly.

15. The eight most common food allergies are:

- 1) *Milk*
- 2) *Eggs*
- 3) *Peanuts*
- 4) *Tree nuts*
- 5) *Fish*
- 6) *Shellfish*
- 7) *Soy*
- 8) *Wheat*

16. Those with celiac disease need to avoid:

- i. *Wheat*
- ii. *Rye*
- iii. *Oats*
- iv. *Barley*

17. Developing a Food Allergy Management Plan:

- Have a written *plan* for how you will handle food allergies
- Know what to *avoid* and substitute
- Read *labels*
- *Prepare* the kitchen and cafeteria
- Identify the *students*
- Develop *cleaning* procedures

18. Which of the following is one of the most common food allergies?

- a) Gluten
- b) Strawberries
- c) *Wheat***
- d) MSG

19. Food allergies are mediated by which of the following?

- a) *Immunoglobulin E (IgE)***
- b) Immunoglobulin G (IgG)
- c) Histamine
- d) Epinephrine

20. Which of the following is NOT a symptom of a food allergy?

- a) Itchiness in the mouth
- b) Rash or hives
- c) Runny nose
- d) *Fever***

21. Which of the following statements about anaphylaxis is true?

- a) It is a symptom of celiac disease.
- b) It is only caused by peanut allergies.
- c) *It can result in death if not treated.***
- d) It is treated with antihistamines.

22. People with celiac disease need to avoid which of the following?

- a) Wheat, Rice, Oats, and Barley
- b) *Wheat, Rye, Oats, and Barley***
- c) Rye, Rice, Oats, and Lactose
- d) Wheat, Lactose, Casein, and Whey

23. Which of the following can sign a Medical Statement to Request Special Meals and/or Accommodations?

- a) Registered nurse
- b) Registered dietitian
- c) Licensed pharmacist
- d) *Licensed physician***

24. Which of the following is TRUE about accommodating food allergies and intolerances?
- a) Agencies are required to make accommodations for all allergies and intolerances.
  - b) Accommodations for food intolerances do not require a signed medical statement.
  - c) ***A food allergy that results in a severe, life-threatening reaction is considered a disability.***
  - d) A note on a physician's letterhead can substitute for a signed medical statement.
25. What is it called when a food that does not contain an allergen comes into contact with a food that does?
- a) ***Cross contact***
  - b) Cross-contamination
  - c) Hidden allergen
  - d) Control point

**Times, Terms, and Temperatures to Remember: Answer Key**

- |                                 |  |
|---------------------------------|--|
| 1. 41 degrees to 135 degrees F  | 1. TDZ Temperature Danger Zone   |
| 2. 4.6 to 7.5                   | 2. pH or acidity danger zone   |
| 3. 0 degrees F to 220 degrees F | 3. Display on a bi-metallic stemmed thermometer  |
| 4. Twenty seconds               | 4. Minimum amount of time to wash hands  |
| 5. 41 degrees F                 | 5. Maximum cold holding temperature  |
| 6. 50% to 60%                   | 6. Optimal % humidity in dry storage area  |
| 7. 50 degrees F to 70 degrees F | 7. Dry storage temperature   |
| 8. Six inches                   | 8. Distance that products must be stored off of the floor and away from the wall   |
| 9. 165 degrees for 15 seconds   | 9. Minimum cooking temperature for any combined food product, all poultry and minimum reheat temperature for all potentially hazardous foods |
| 10. 155 degrees for 15 seconds  | 10. Minimum cooking temperature for ground beef and pork   |
| 11. 145 degrees for 15 seconds  | 11. Minimum cooking temperature for whole beef or pork roast, rare steak   |
| 12. 130 degrees for 112 minutes | 12. Minimum internal temperature and time for rare roast beef (such as prime rib)  |
| 13. 135 degrees                 | 13. Minimum holding temperature for hot foods  |
| 14. 180 degrees                 | 14. Required minimum temperature for automatic dishwashing   |

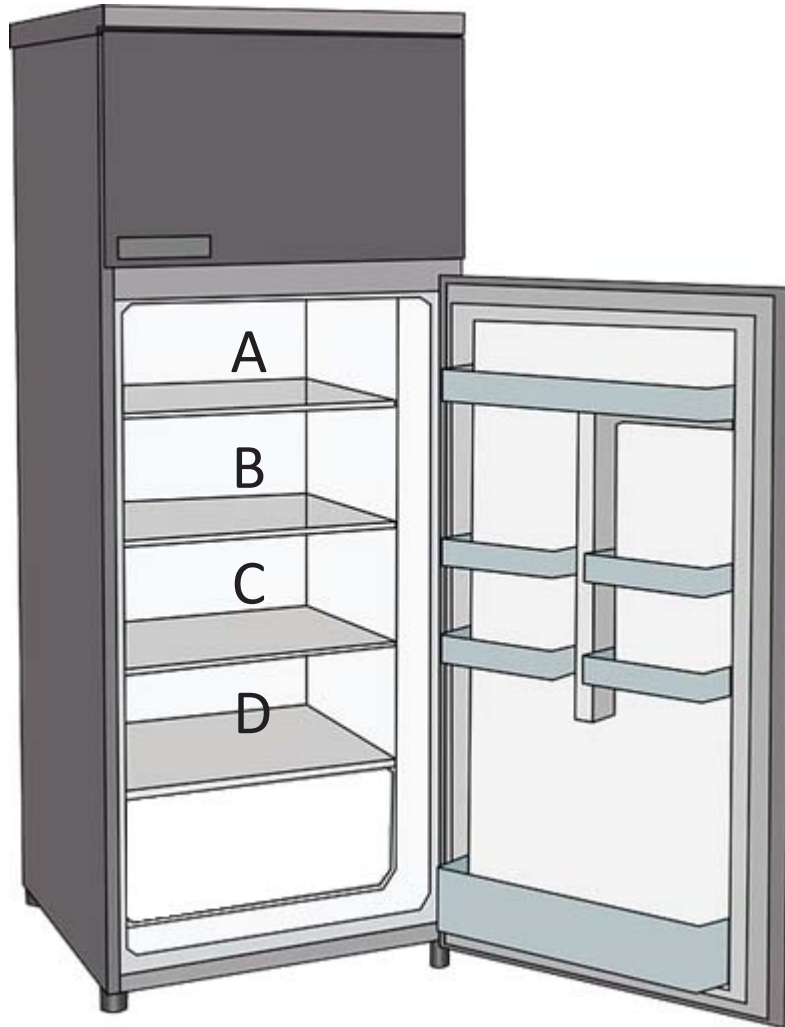


15. 170 degrees for 30 seconds	15. Minimum requirement for hot water sanitizing in manual dishwashing
16. MSDS	16. Material Safety Data Sheet
17. HACCP	17. Hazard Analysis and Critical Control Points
18. FIFO	18. First In First Out
19. CCP	19. Critical Control Point
20. FATTOM	20. Acronym for "Food, Acidity, Time, Temperature, Oxygen, and Moisture" conditions necessary for bacterial growth
21. 55 degrees to 120 degrees	21. Recommended temperature for chemical sanitizing in either hand washing or mechanical dishwashing
22. Cross connection	22. A link between your drinkable water system and unsafe water or chemicals through which backflow can occur
23. Cross-contamination	23. Transfer of harmful substances to food by hands, food-contact surfaces, or cleaning cloths that touch raw food, are not cleaned and sanitized, and then touch ready-to-eat food
24. IPM	24. Integrated Pest Management
25. Vacuum Breaker	25. Designed for use under a continuous supply of pressure. Spring-loaded device to operate after extended periods of hydrostatic pressure
26. Pasteurization	26. A low heat treatment used to destroy disease- causing organisms and/or extend the shelf life of a product by destroying organisms and enzymes that cause spoilage

27. Ultra Pasteurized	27. A pasteurization that takes place using ultra- high temperatures and then the food item is placed in aseptic packaging
28. Hermetically Sealed	28. A container that is completely sealed against the entry of bacteria, molds, yeasts, and filth as long as it remains intact
29. Sanitizer	29. Approved substance or method to use when sanitizing
30. Infection	30. Illness caused by eating food that contains living disease-causing microorganisms
31. Intoxication	31. Illness caused by eating food that contains a harmful chemical or toxin
32. Irradiation	32. Exposure of food to low level radiation to prolong shelf life and eliminate pathogens

**Food Storage Safety: Answer Key**

You just received your delivery; write in the space provided next to each item which shelf it belongs on (one item per shelf) in the refrigerator. Be sure to have the correct order from top to bottom.

BDCA



# USDA Professional Standards

## Summary of Hiring Requirements for School Nutrition Program Directors

*SNA is your resource for professional standards!*

School Nutrition Program Directors – those hired on or after July 1, 2015 – are subject to the new education requirements below. Existing directors will be grandfathered in their current positions as well as in the Student Enrollment category where they are working. (School Nutrition Directors are individuals responsible for the operation of school nutrition for all schools under the education agency (LEA).

Minimum Requirements for Directors	Student Enrollment 2,499 or less	Student Enrollment 2,500 – 9,999	Student Enrollment 10,000 or more
Minimum Education Standards (required) ( <i>new directors only</i> ).	<p>Bachelor's degree, or equivalent educational experience, with academic major in specific areas;*</p> <p><b>OR</b></p> <p>Bachelor's degree in any academic major, <u>and</u> State-recognized certificate for school nutrition directors;</p> <p><b>OR</b></p> <p>Associate's degree, or equivalent educational experience, with academic major in specific areas,* <u>and</u> at least one year of relevant school nutrition programs experience;</p> <p><b>OR</b></p> <p>High school diploma (or GED) <u>and</u> three years of relevant experience in school nutrition programs.</p> <p>(LEAs with less than 500 students: State agency may approve a candidate that meets the educational standards but had less than three years of experience).</p>	<p>Bachelor's degree, or equivalent educational experience, with academic major in specific areas;*</p> <p><b>OR</b></p> <p>Bachelor's degree in any academic major <u>and</u> a State-recognized certificate for school nutrition directors;</p> <p><b>OR</b></p> <p>Bachelor's degree in any academic major <u>and</u> at least two years of relevant school nutrition programs experience;</p> <p><b>OR</b></p> <p>Associate's degree, or equivalent educational experience, with academic major or concentration in food and nutrition, food service management, dietetics, family and consumer sciences, nutrition education, culinary arts, business, or a related field; and at least 2 years of relevant school nutrition programs experience.</p>	<p>Bachelor's degree, or equivalent educational experience, with academic major in specific areas;*</p> <p><b>OR</b></p> <p>Bachelor's degree in any academic major, <u>and</u> a State-recognized certificate for school nutrition directors;</p> <p><b>OR</b></p> <p>Bachelor's degree in any major <u>and</u> at least five years of experience in management of school nutrition programs.</p> <p>*Specific majors/areas of concentration: food service management, dietetics, family and consumer sciences, nutrition education, culinary arts, business, or a related field.</p>
Minimum Prior Training Standards (required) ( <i>new directors only</i> )	At least 8 hours of food safety training is required either not more than 5 years prior to their starting date or completed within 30 calendar days of employee's start date.		



# USDA Professional Standards

## Summary of Continuing Education Requirements for ALL School Nutrition Employees

*SNA is your resource for professional standards!*

### REQUIRED TRAINING FOR ALL SCHOOL NUTRITION EMPLOYEES

#### **New and Current Directors**

**For School Year 2015-2016 ONLY: at least 8 hours of annual continuing education/training.**

Beginning school year 2016-2017: at least 12 hours of annual continuing education/training.

*This required continuing education/training is in addition to the food safety training required in the first year of employment.*

#### **New and Current Managers**

**For School Year 2015-2016 ONLY: at least 6 hours of annual continuing education/training.**

Beginning school year 2016-2017: at least 10 hours of annual continuing education/training.

#### **New and Current Staff**

**For School Year 2015-2016 ONLY: at least 4 hours of annual continuing education/training.**

Beginning school year 2016-2017: at least 6 hours of annual continuing education/training.

#### **New and Current Part-Time Staff (less than 20 hours per week)**

Each year, at least 4 hours of annual continuing education/training (regardless of number of part-time hours).

**If hired January 1 or later, an employee may only complete half of the required training hours for that school year.**

*Training is an approved use of State Administrative Expenses (SAE) funds and a variety of training formats are allowed. States may use contractors or partner with other organizations (School Nutrition Association and National Food Service Management Institute, etc.) to provide training.*



# USDA Professional Standards Summary of Requirements for State Directors

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## HIRING STANDARDS FOR NEW STATE DIRECTORS

### State Director of Nutrition Program

A Bachelor's degree with an academic major in areas including food and nutrition, food service management, dietetics, family and consumer sciences, nutrition education, culinary arts, business, or a related field.

Extensive relevant knowledge and experience in areas such as institutional food service operations, management, business, and/or nutrition education.

Additional abilities and skills needed to lead, manage, and supervise people to support the mission of school nutrition programs.

### State Director of Distributing Agencies

A Bachelor's degree.

## MINIMUM PRIOR TRAINING REQUIREMENTS FOR ALL STATE AGENCY DIRECTORS

### Director of School Nutrition Program

At least **15** hours of annual continuing education/training.

Must PROVIDE, or ensure that State agency staff receives continuing education/training.

Must PROVIDE a minimum of **18** hours of training to SFAs each year.

### State Director of Distributing Agencies

Each year, at least **15** hours of annual continuing education/training.

Must PROVIDE, or ensure that State food distribution staff receives continuing Education training.

Prevalence of Childhood Food Allergies in the United States  
Lyndsey Ruiz, BS, DTR

School nutrition program professionals feel that additional training on special diets and food safety is necessary to better accommodate increasing food allergies (Lee, Kwon, & Sauer, 2014). This desire for additional training was reported by Lee, Kwon, and Sauer (2014) as a result of focus groups with child nutrition professionals. Focus group participants expressed a concern that prevalence and variation of food allergies in children have increased in recent years. This summary reviews data on food allergy reporting and examines whether prevalence (occurrence at a single point in time) and incidence (the rate of new cases in a specific population during a certain timeframe) of childhood food allergies in the United States have increased.

According to Boyce et al. (2010), people often have confusion in distinguishing between nonallergic food reactions, such as gastrointestinal distress caused by lactose intolerance, and food allergies, which has been defined in the *Guidelines for the Diagnosis and Management of Food Allergy in the United States* (Guidelines) as “an adverse health effect arising from a specific immune response that occurs reproducibly on exposure to a given food.” The National Institute of Allergy and Infectious Diseases assembled and led an expert panel in the development of the Guidelines to help resolve this misunderstanding, which led to a public perception of an increase in food allergies (Boyce et al., 2010). Among other details, the Guidelines include criteria for diagnosing food allergies versus food intolerances, or other nonallergic reactions, and help identify areas needing future research (Boyce et al., 2010).

Currently, studies examining incidence, prevalence, and epidemiology of childhood food allergy in the United States are limited (Boyce et al., 2010). This deficiency may be due to limitations causing inaccuracy in comparing data collected before use of the Guidelines. Prior to the Guidelines, there was neither a consensus on the definition of food allergy nor well-accepted criteria for diagnosis (Chafen et al., 2010; Sicherer & Sampson, 2013). With inconsistencies between studies, assessing results to determine prevalence was most likely unreliable.

Many previously conducted studies performed analyses using self-reported data collected via phone interviews (Boyce et al., 2010). Although there are clinical tests that can be utilized in diagnosing food allergy, widespread use of these tests for research is limited due to need for specialized staff, time, and expense among other factors (Chafen et al., 2010). However when comparing overall prevalence of food allergy, a meta-analysis by Rona et al. (2007) found drastically different values for self-reported food allergy and food allergy diagnosed with one of three clinical tests. The researchers stated an overall prevalence of self-reported food allergy to be 12% for children and 13% for adults (Rona et al., 2007). Self-reported values were much higher than the overall prevalence of 3% for all ages when using a skin prick test, checking for serum IgE markers, or by double-blind, placebo-controlled food challenge (Rona et al., 2007). These results show that food allergies tend to be over-reported when relying on self-reported data alone.

Although many studies draw food allergy prevalence conclusions based on self-reported data, Branum and Lukacs (2009) utilized the National Ambulatory Medical Care Survey, the National Hospital Ambulatory Medical Care Survey, and the National Hospital Discharge Survey to estimate food allergy prevalence in American children. Overall, data analyzed using these surveys found an approximate tripling in food allergy prevalence; however the researchers acknowledge that this apparent increase could be due to better coding and reporting of food allergies rather than a true increase in disease (Branum & Lukacs, 2009).

Several studies claim that there is evidence of increased prevalence in food allergy, but base their conclusion on self-reported data which has shown to be unreliable. Also due to a lack of studies in the United States, especially since the 2010 publication of the Guidelines, data used to estimate food allergy prevalence was not collected consistently.

Therefore, a determination on whether food allergy prevalence in children has increased cannot be certain. Possibly, the growth is valid due to an actual increase. Or, the growth may be an over-reported incidence because the majority of data collected was self-reported. Hopefully with increased usage of the Guidelines, a more accurate figure for prevalence of childhood food allergy in the United States may be determined in the near future.



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